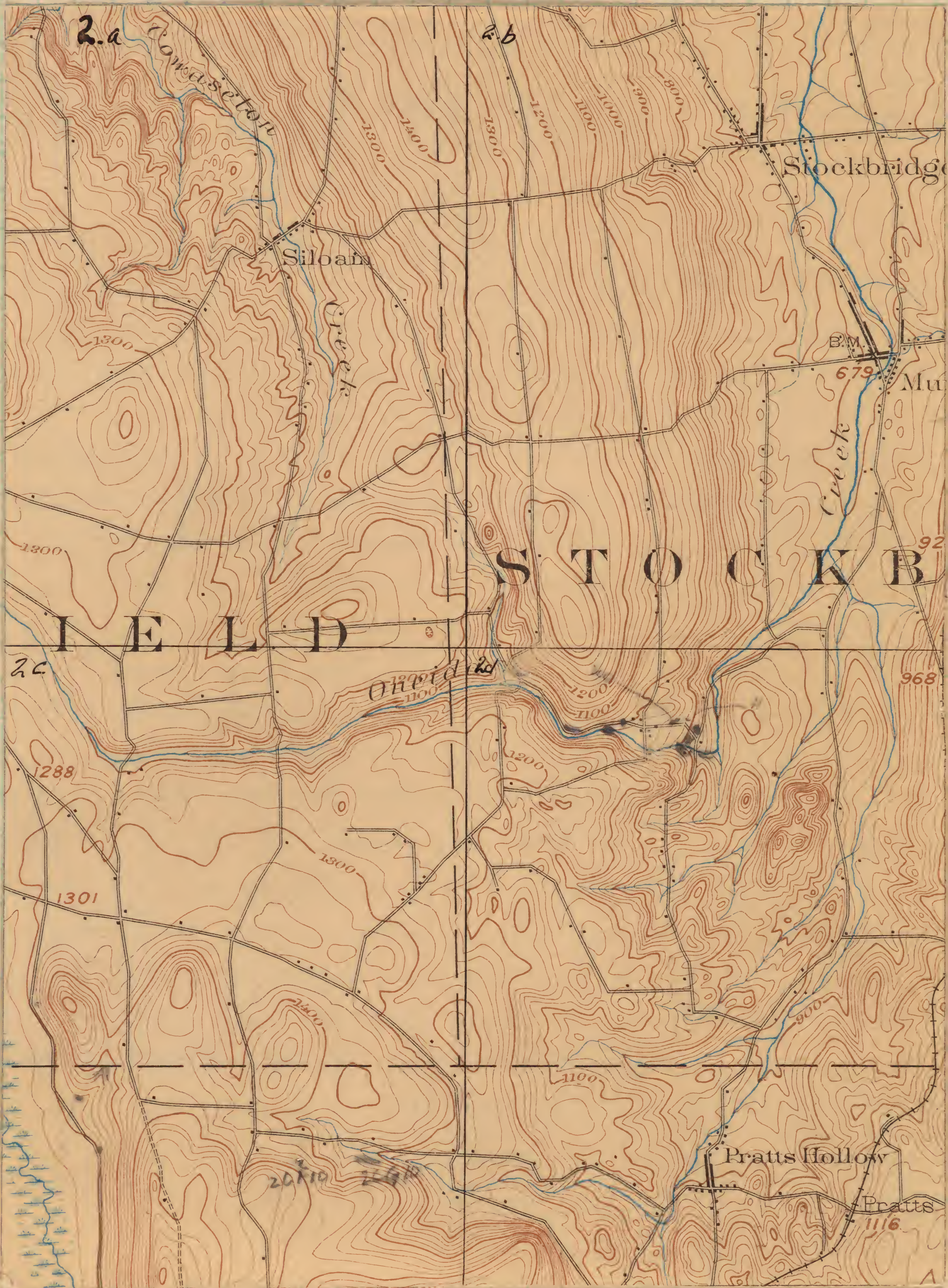


1000

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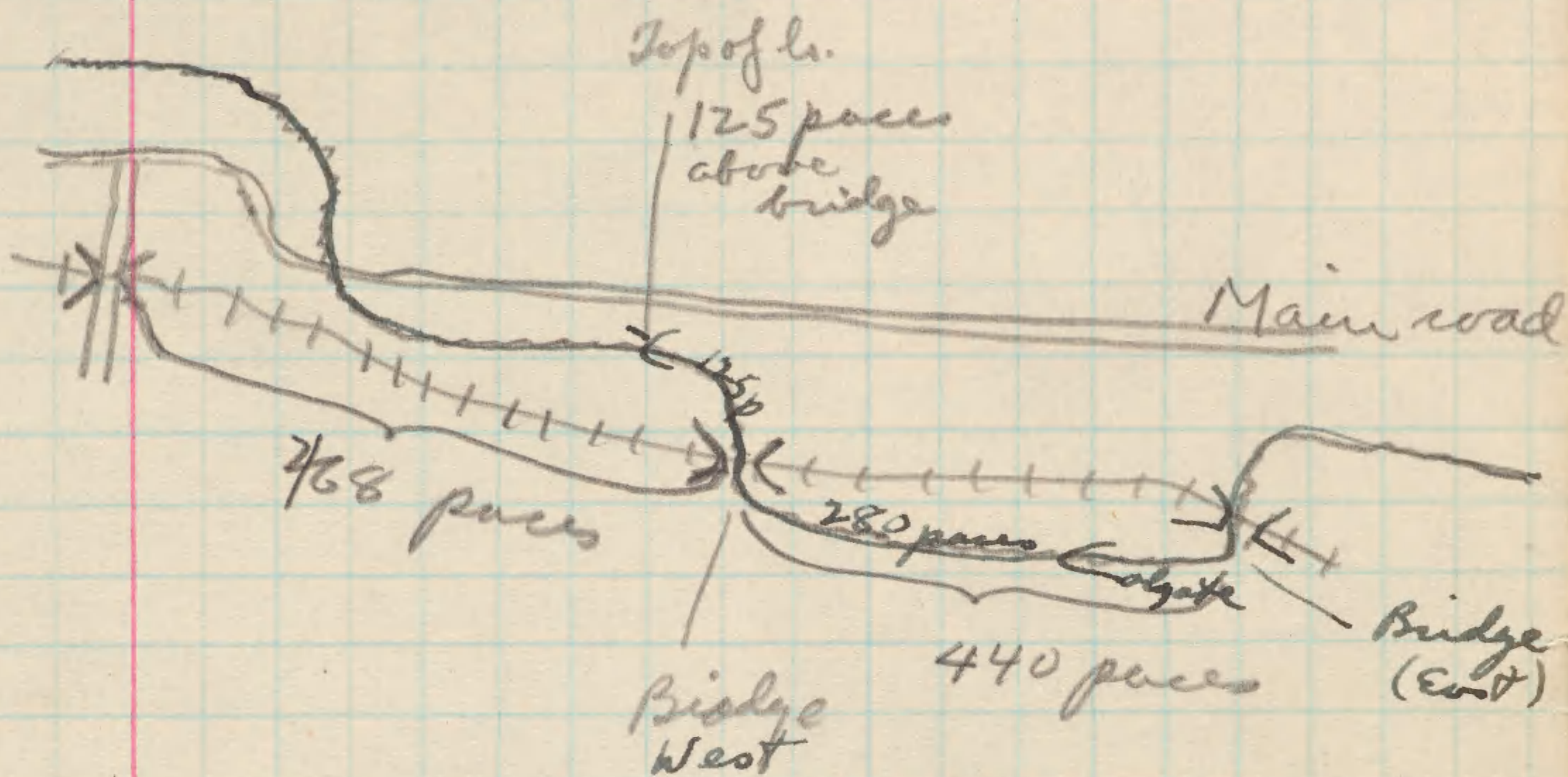


September 3, 1938

1000a

~~127~~

Railroad cut & gorge at Earlville



Limestone $2\frac{1}{2}'$ thick in three main layers.

Colgate goes under stream level 280 paces down from (West) bridge over stream.

Road to West RR bridge over Creek 468 paces

Paces from bridge to top of Stone Mill — 125 "

R.R. cut ends 320 paces from West Bridge

Limestone first appears in stream 400 paces below West bridge

592 paces to East bridge from West bridge

1001

Aug 31

1001

Onondaga Creek.

2d C3

960' Onondaga ls. Light
grey on weathered surface
darker interior. Etched
surfaces where water
babbled.

Smoothing gives stone
ability of easy fracture
on ledge at level of road
considerable flint is
noted.

2d A1

Agoniatites ls.

*A. expansus**P. macclurei*

Sept. 11.

2d D 2 88'

Quarry just N of Stockbridge Falls.

Exposure of heavy-bedded massive limestones which in the bottom layer of 2' are crumbly and of a soft, light grey color becoming darker toward the top.

On this are three feet of blue-grey, fine, even grained limestones.

Above this 5' of blue ls. showing favosite corals and Stromatopores and crinoid fragments.

On this are 7' of limestone making a total of 17' for the thickness of the Quarry.

In the middle layers of the quarry considerable crystalline grains are seen in the stone. In the top beds much clay has come in in thin layers making well marked bedding planes so that the stone may often be split into thin layers. Small particles of clay locally make a limestone-clay conglomerate. Solution weathering leaves irregular lines of unequal hardness across the blocks marked by pits where the more easily soluble matter lay.



In general very rare
crinoid stem-segments and
small fragments of stem
predominate with here and
there small heads of
Favosites and an occasional
cup coral. Stromatopores are
common in two of the beds
one 7' up, the other about 10.

Joints:- not well marked.

These beds are probably of the
waterlime group.

2dD2' Across road SE. from 2dD2
a large quarry, bottom beds waterline
at about 840'

900' Quarry wall begins

905' Even grained grey ls. very dark
when fresh but weathering to
a light grey surface. On surface
it is marked by elongate pits
where a brown carbonate rust
has fallen or been leached out.
Fossils are rare or absent in
this first five feet from the floor

911' Same with few fossils

916' at 1012' considerable bit of the
shale between the limestone beds.

1014' fossils fairly common
but mostly of *Strophodontes*
The stone has more
crystalline fragments.

922' Stone with large *Strophodontes*
It has a fetid or bituminous
odor when struck.

927' Stone above this level is
dark blue grey, semi-cryst-
alline ls. streaking with
fossils

S. coeymansensis

A. reticularis

Meristellas etc.

About 5' of this fossiliferous
stone is revealed.

1005

Sept 11.

1005

Rocks of Waterline division are
found below the bridge at
Stockbridge falls.

1006

Sept. 11.

1006

Onondaga is found about 50' below road at 2d C3. and continues up to road

Onondaga - Helderberg contact is between 920 and 946 probably at 935!

Sept 11

2d C2

Onondaga - 1000' representing one of the very topmost beds. It is dark grey in color, much darker than the semi-crystalline beds below.

Onondaga - Marcellus contact in creek is at 995-1000' Probably 1010
June 27

The Agoniatites ls. is about 30' 25' above Onondaga.
June 27

At 1020' hard black limery bands in the Marcellus contain small fossils as
P. fragilis
S. fiducella

Between the limery bands the shale is jet black and breaks into pieces of paper thickness.

1089' the Marcellus is still...
...and retains its extreme finity. The Agoniatites band is at 1032' about 100 yd east of road intersection

1007

1007

The sand made up almost
entirely of *Styliolina* is at
1025'

Aggrinatites limestone is at
about 1040-1050 feet north
of Onida Creek in a little
bulky. It is about 10' higher
than bridge over creek.

Aug 31.

2C. 810. 1340' 100 yds by 20' grey
arenaceous shales very
sparse in fossils. A hard
band causes a small cascade.
The hardness due probably to
increasing silt. Small oval
concretions common of the
kind that have a yellow-
brown rod as an axis.

Fauna

L. perplena.*Replithera* sp.*Bygonia**P. Pirata* commonest form*C. scitulus**Orthoceras* sp.

None of these fossils is
found in such abundance
not even the commonest.

Joints Fairly well developed
in bed of stream on a
rectangular set.

N 41 E

N 57 W.

These shales probably belong
just below the Piche point
horizon

1009

1009

Aug 31

2 CF 10

1450'

soft blue-grey shale
with*P. lundiniformis**H. trigonatus**C. vancouverensis**Ostracoda**E. arcuata**H. trigonatus**C. multicostatus**M. subulata*The shales at 1450' are
brown and weather into
shales*L. obliqua**P. flabellum**T. subquadrata**C. pictus**B. sulcomarginatus**Ignitina* sp.*Parabucella**P. sectiformis* var. *slight**M. subulata**P. patulus**C. vancouverensis* sp.

There are about 15 shales

1010

1010

2cA7

 π_2 oblongatus

P. discolor

N 23 E 90

| Trade | N 62 1/2 W / 78° N |

1011

Aug 31

1011

2CB8

Peckworth sh. crumbling to
scabbling, small claps.

Up ravine at 1280-1290
Peckworth sh. with S. pumila

2CB9 1300' Massive, grey shales breaking
into large pieces, very
fossiliferous in a few kinds
Large Spirifers

S. pumila

B. sulcomarginata

Productella

S. perplana

Canadotectaria sp.

P. lirata

A. umbonata

P. flabellum

N. oblongatus

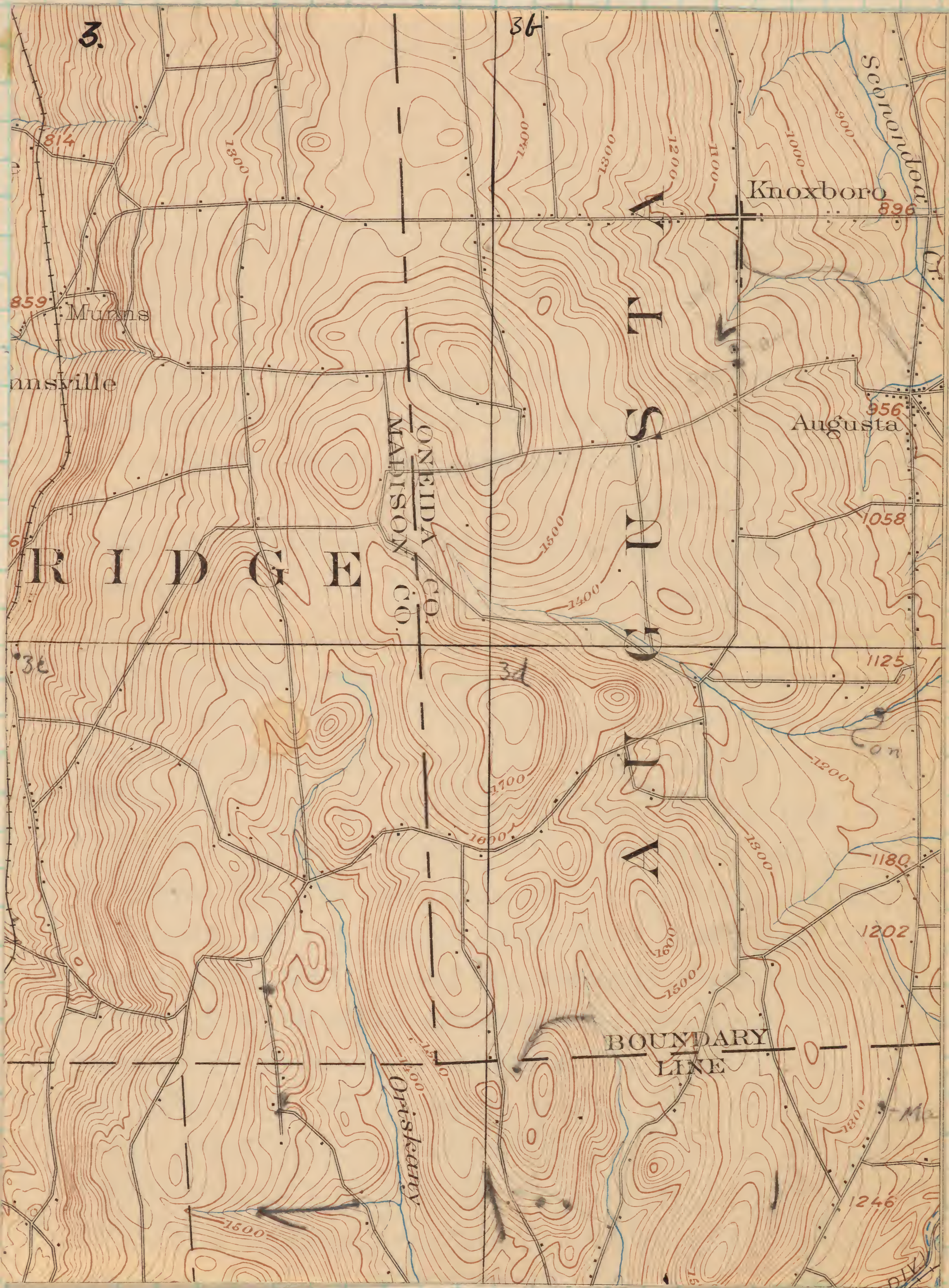
C. scithus

M. concentrica

Correlated with 2C. and 5B C5

$$\begin{array}{r} 16 \overline{) 259} \\ 32 \\ \hline 239 \\ 208 \\ \hline 31 \end{array}$$

$$\begin{array}{r} 16 \overline{) 259} \\ 32 \\ \hline 239 \\ 208 \\ \hline 31 \end{array}$$



1013

Sept 7.

1013

36 E6.

gy. ls. with fetid odor and
fracture
Texture very fine, crystal
grains of crinoida and
some of inorganic calcite.
Weathers into large boulders
with rounded & striae
from solution. Some beds
weather or break into irregular
dabs.

Fossils.

*S. coeymansensis**A. reticularis*

Favosites

L. rhomboidalis

The bed between 1138 and
1143' is not very fossiliferous
but that between 1145 and
1149 contains *S. coeymansensis*
and *A. reticularis*.

Stone more compact from
1145 to 1149 and contains
fewer fossils.

Favosites is common at
1150' in very large heads.

Between 1160 and 1165 stone
contains much siderite? in
small masses.

at 1183' limestone with
much flint and a fauna
predominantly of corals.
This ls is lighter of color
and very even grained
The Helderberg ls. below

1014

ceased to outcrop at 1171014. Hence
between 1173 and 1183 the Oniskany
horizon must come.

F. canadensis in ls
at 1188'

1200' Onondaga disappears.

This stone does not have
the fetid odor on fracture
of that below. It was
noted to contain
considerable FeS_2 .

1176' Oniskany ss. in
places, brownish in color
forming a small ridge. It
is about 15" thick.

A quarry 10' high in the
Helderberg is opposite the
Knottwood cemetery. At about
1265'

Joint systems are not
well defined because of
solution weathering.

1115
30 E9

Sept 9.

1015

1180' Onondaga ls.
in road bed gully
showing characteristic
development of flint.

1016

Sept 8.

1016

3CF8

1440 Arenaceous shales
with *S. perplana*, *H. delany*,
C. mucronatus in road bed
and in small gully opposite
houses.

Solville

Sept 8.

3CF10

1410' Hard arenaceous sh
with *P. lirata*

*P. flabellum**S. channingensis**S. globosus**S. perplana*

Joints N68E
Solville

Also outcrops in road at
intersection at 1420'

1017 Sept 8.

1017

3CG12 1280' Shale soft and black
when wet of the same
kind as found at 3dA11.

1312' a quarry about 30' high of
soft sh. bl. black in color
Fossils are rare

N. triquetra c. large

M. pygmaea

L. orthymus (?)

Lingula sp.

C. scitulus

O. cf. subulatum

Small concretions, which some-
times contain a shell, are common

1356 These shales are somewhat
harder.

Onchopora serpens?

1383 These are hard and
calcareo-arenaceous.

3CF12

1400' the top of this horizon is
met as a very hard ss.
forming a ridge around
south side of ravine and a
cascade at the top.

1018

Sept 8.

1018

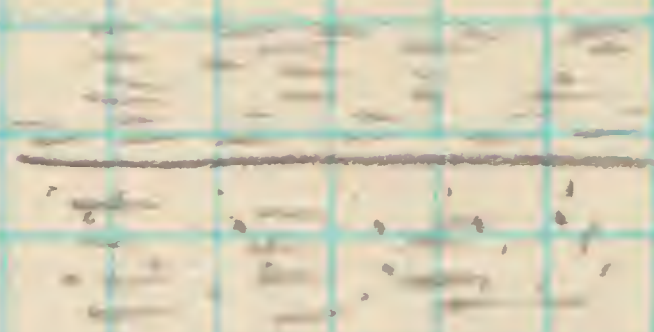
3d B11

Large quarry showing joint faces
N 25-40 E with a complementary
set poorly developed.

The stone is grey or brownish
weathered somewhat sh. with
sparse fossils. The stone must
be slightly calcareous to judge
by pits on its surfaces. 18'
bedded. This stone is also
observed in the stream bed
where it causes a falls
by virtue of its hardness.

About 20' above the cascade
are found the dark shales
of the Pechesport type with
Gastropod casts, *Reiothyridus*
etc. Two segments of a large
coiled cephalopod were also
found in these.

Anterop of same also observed
on east hill.



Pechesport sh.

Solville sh.

Boulders of Burrhead Quarry
ss. were found everywhere
in fields showing the
Sh-Ludlowville boundary to be
on high hills.

1019

Sept. 8.

1019

3d A11.

Soft blocky shale, crumbling in thin slabs or larger conchoidal slabs. These have the appearance of the Beckspoint shales in every respect. Fossils are rare.

L. antiquum large ?

M. trispinatus

O. illoceus

P. fragilis

M. pygmaea

48' above first exposure of blue shale is a fall of about 50' exposing the section. 65' above starting place shales are slightly tilted, showing a change in lithology.

85' above origin shales are hard, arenaceous with large *Spinifers*, *S. perplana*, *P. flabellum*.

First outcrops at 1297'. Hard sandy layers at 1390-1400. The sandy band is about 15-20' thick and causes the flat between the hills.

1020 Sept. 7.

1020

3d H2 1st. step. Grey ls. with flint - Onondaga

Platyrophyllum decorticans
This occurs at about 1115' at
6' thick where best exposed
but intermittent outcrops are
seen several times in the
brook. The true thickness
could not be recorded.

Onondaga boulders are
common for fully 100'
above the first outcrop.

3d H7. Stream at August a shows no
exposures of bed rock.

1021
3d. H 9:

Sept. 7.

1021

Fissile shales, black when wet, bluish-black when dry and on fresh surface. Weathers to small chips of an olive color.

No fossils.

These are Marcellus or Cardiff. Large slabs fracture with a curved surface, especially when wet.

3dcl4

Stream here followed nearly to source but no outcrops seen. However in the flat at road and for 10 "steps" above Onondaga boulders with flint were noted.

At 14 "steps" dark ls. boulders were noted probably Agoniatites ls.

1022

1022

Sept 7.

3d F 11.

5-0-75 yds by 10' vertical of
grey arenaceous shale in appearance
not unlike that of sandy shale
of New Magn but having less
fossils:-

P. flabellum c.
C. mucronatus
P. crata
Toxonema sp.
Large *Spinifers*
M. concentrica
S. angulatus
S. perplana
Leopteria sp.
H. debayi

Solville

Joints:- well developed N 28 E.
Less " " N 60 W.

Elevation about 1440'

This stone causes a flat
at about 1460'

This is correlated with the
arenaceous stone below
the Peckport sh & on which
they rest.

1023 Sept. 10.

1023

3CA2

992'

6 steps above road, first outcropping of Onondaga in stream-bed.

1015'

11 steps the exposure is continuous.

1025'

12 steps a one foot layer of dark flint.

1047'

16 steps Onondaga bedrock disappears

1200'

44 steps to 46 steps gravel and much in stream bed is jet black, with many Marcellus sil. pebbles.

Sept 8.

3d 68

1555' Peckport shales in a
jumbled mass of blocks, may
be out of place!

7th step shales of the same kind
as at 3d A 11 1297'. No fossils.

11 steps - 3: - bottom of huge cascade
showing soft dark shales.

12 step Leiorhynchus.
H. pygmaea
O. cf. subulatum

13 Shales harder, coarser
do not split in flat slabs.
Leiorhynchus very large.

15 Shale character resumed
H. oblongatus

17-18 Shale becoming silty

21 H. D. shayi

1504'

Top of falls at 25th step
The fall is 72' high. Many *Trematis*
are found at top of falls, as
are *Leiorhynchus* boulders and
Pancake (?) mould.

Joints at top of falls
N 40 E for best developed
set. A complementary set causes
the formation of rectangular
blocks. This set also forms
a set in stream bed.

1870
1275
145

267
145
1412

1025

Between steps 1+2 above falls
Pechaport shales are found in
the ravine and these continue
to its source.

On these about 30 above falls
fossils are quite numerous
notably

S. pennatus, well
ornament with well extended
wings but blunt points.

A. umbonata

M. randalli

Leiopteria casts

Calcareous concretions generally
have good specimens of
Chonetes and *Ambocoelia*

L. delphicola

M. concentrica

10 steps above falls a hardening
of the beds to calcareous stone
has produced a flat.

Fossils in the calcareous stone

Ancynosurus bulbosus.

A. umbonata

Productella sp.

M. concentrica

S. pennatus

P. flabellum

The lime ls-sh is only
a foot or so thick and
on it rests sh.

1025

1026

1026



1027

July 25

1027

4a B 8, 9, 10, 11. Hamilton (excellent specimens)

1028

Sept 3.

1028

4d

4' very arenaceous shales or
sandstones with many*Camarotoechias**G. cuneata**P. constricta**T. constricta*Small spirifers probably *Tullius*.

Sept 3.

Ravine just

West of West Eaton

bb in brook about 2' vertical

at about 1460-1480.



5d E10

1293' 10' sandy shales with
few fossils becoming
transition into sandstone
with binary brachiopods
Eumella. The outcrop is
identical to that of 8d of the

1303' rock is ss showing
a lens composed of fossil

joint - N35 E.

1340' dark, soft argillaceous sh.
with few fossils.

C. mucronatus

C. ventriosus *A. umbonata*

C. vicinus

H. triseriatus

O. thurmonsi sp.

Then continue to 1375' where
a hard sandy band is
encountered. It cannot be
well studied as it is only
slightly exposed.

5d A5

Shed 1300.

1353' 4' vertical of fairly
arenaceous shale with
fossils.

Conostrophia sp.

Hiptis sp.

Orthoceras sp.

D. hamiltonensis

Have seen the important to
positively identify.

1355 in well slabby ss. with
P. flabellum - and a section
also *T. carinatus*.

1354' the ss. band has
been composed of fossils
on the library stone

P. flabellum

M. concentrica

This outcrop is just on
north side of road.

1381' in ravine along road
dark soft shale with
Conostrophia continuing to
1403'

1425' the shale are more
arenaceous,

Orthoceras sp.

1425' the mine becomes
shale and off small scale

1032

Aug 22

1032

5a E9. 1260'

Shales of Eaton (1a)
 appearance. Blk grey when
 fresh. Limestone nodules
 weathering, breaking into
 elliptical or oval masses. fossils
 not common here.

O. parvula?*Canonicella* sp.*Productella* sp. common

56 D7

Merrillville Station

1220' 5' vertical near station
 soft blue shales with
 fossils in the S. lamination

H. elongatus

B. submarginata

These belong to the same set.

Peckport branch crossing

1263' 10' vertical of these shales
 in an excellent exposure

L. subquadratus is common.
 all the other fossils are rare.

A. submarginata.

These shales are marked by a
 peculiar conchoidal weathering
 which separates out small
 oval masses.

Joints: - $\left. \begin{array}{l} N 41 E 90^\circ \\ N 39 \frac{1}{2} E 90^\circ \\ N 41 E 90^\circ \end{array} \right\} \text{major set.}$

$\left. \begin{array}{l} N 89 E 63 \frac{1}{2}^\circ N \\ S 87 E 63^\circ S \end{array} \right\} \text{same set.}$

The set $S 87 E 63^\circ$ is well
 developed in places.

1260' 4 steps above road ^{on outside} intersection. 2' bed of limy stone with abundant *Calymene* and *spirifer* as seen at Burchard's Quarry. Form a ledge in topography here and behind the bushes.

1278' Blue shales crumbling in irregular masses exposed for about 20' vertically. See thesis for fauna. 15.

joints: -

One set N39E 90° is locally closely spaced.

Another set. N29W 74°E is very irregular in spacing and along the plane.

1195' same in 15' exposure along the road.

joints

N37E 90° } Best developed
N39E 90° } set

The plane of another steeply dipping is very irregular. *Avicula pectinata* } common
Actiniferma }
Also *B. submarginata*

1035

1035

Aug 30.

5d 214

1340

1350

3 or 4' vertical of sandy shales
with large fossils as

A. princeps

M. mytiloides

L. obsoleta etc.

Belongs to new Gyn horizon.

This stone marks a flat

depression in stream basin.

The uppermost foot is of hard
sandy calcareous stone which
has the blocky fracture.

Aug 30

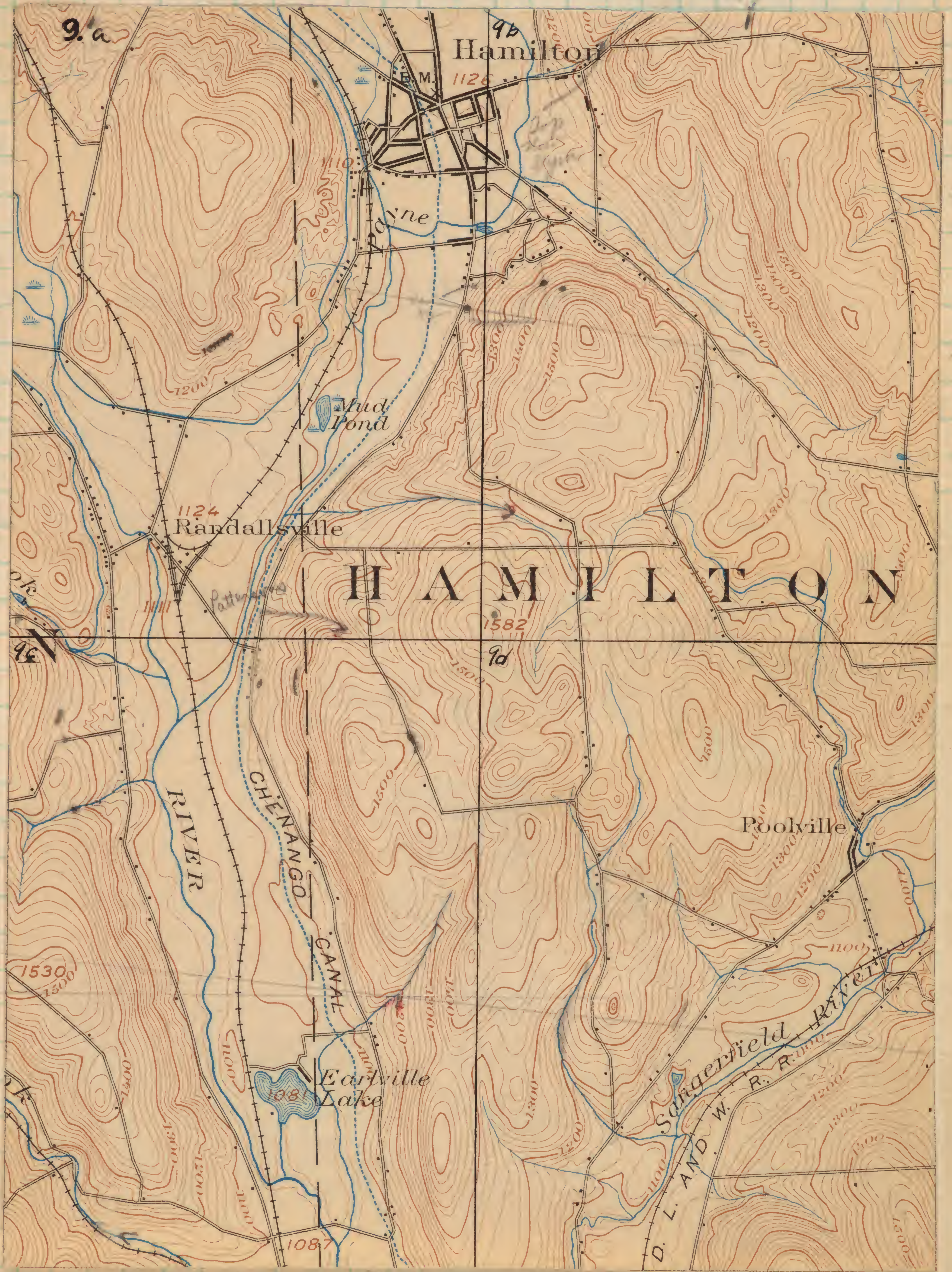
1036

1036

5d 24'

Shales of 10' formation
1400' Very soft dark fissile
shales. Much jointed but
regular sets are hard to
distinguish.

Fossils - see thesis.
Outcrop 8-10' high.



5dD3.

1037

Aug 30.

1037

1310' a foot or two of grayish shale

1322' grey sandy shales with abundance of fossils

L. macroptera

P. flabellum cc

N. arguta cc

Canarotocchia sp. ^{replaced by} ~~replaced by~~

A. princeps

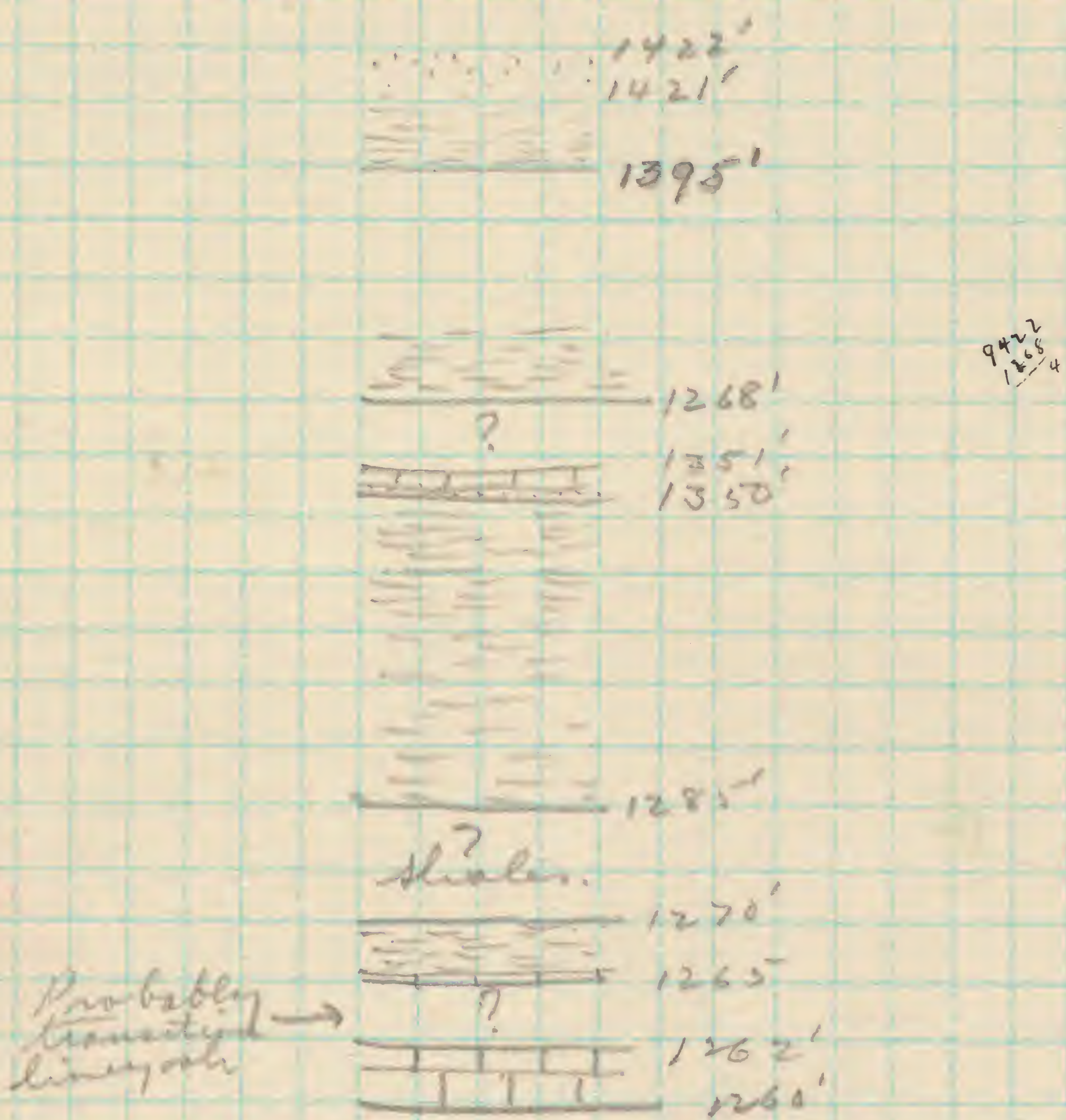
A. boydi

M. mytiloides

B. truncata

These shales are also found a 10 feet higher up where they are more compact probably formerly somewhat calcareous and representing the top of the horizon.

Represents new Syon horizon.



Section at Dadd's ravine

5d C2.

Aug 30

Ravine opposite H. Dadd's Lumber

1260' hard calcareous rock
with *S. granulosa*.*T. carinatus*

About 2' vertical.

On this at 1265' rest crumbly
blue shales tearing with small
fossils asSmall *Tenoculites**Philidops hainthornii*which sets this as horizon
marker between Ludlowville
and Skaneateles. Small clay
concretions are noted.1350' Top of falls which is
fully 65' in height exposing
the whole section of Eaton

Delphi

from ls at its base to
top of New Gyrus horizon.At top of falls some slabby
ss. layers were noted.Above falls valley flattens
because of hard layers.

Joint N34E90°.

In stream bed immediately
on top of some sandy layers
which are flat, are limestone

6" thick conchoidal masses

of fossils of which

Obolites eburnatus is

most abundant and

Athyrids common.1268 - dark sh. splitting at this
place in oval plates. Few
fossils.*Leiopteria* sp.

1039

422' A large section of ~~shale~~ is revealed at about 1395' much moss covered but still a bluish shale which seems to become harder as the cascade is mounted. At 1417' it is slabby but contains considerable argillaceous matter. At 1422 a hard layer of ss. is found, blue-grey, hard, the cause of the cascade, and here again the ravine flattens down.

This ss may belong to the U. Quarry.

A small drift block in the stream has

S. pennatus

C. scitulus

A. umbonata

It is probably from a ledge such as that met at first falls in ravine at Dunster's.

Aug 30.

5d C2'

1360'

West Gym shales.

1040

Aug 30.

1040

56-B12. 1330' shales of (13 Eaton) with numerous *B. sulcomarginata* lining the ravine to 1355' where they are harder forming a falls. *D. pyralis* was noted at this level.
joints N 36 E 90°

1041

Aug 30

1041

5a & 7. Morrisville

1380' 5' vertical New Gym
horizon. Grey blue shales.
Numerous large fossils.
Joints N 35° E 90°.

1406' The top horizon of hard
calcareous stone is met.

1460' blue black shales giving
way to ss.

1470' sandy-stone slabs in stream
bed, hard and causing a flat in
the bed, probably represent a local
hardening in the black shales.

Modiola corbuliformis } noted
small *Spirifer* }
in the dark shales.

ss. slabs with 2 canisters of the
kind found in the U. Quarry
everywhere cover the slopes
at this level indicating that
this horizon is nearby.

7

1042

Aug 30.

1042

56-B10.

1415' Sandstones exposed for
30 yds. by 4'. Grey silt
breaking in large flat slabs
or slabs with a crudely
subconchoidal surface. 10'
below there are arenaceous
shales splitting into very thin
layers.

The ss. are not very fossil-
iferous but bear

P. flabellum cc.

N. arguta cc.

D. calinatus

Camerozoechia sp.

Some weathered slabs
composed entirely of fossil
casts suggest lentic lenses.
This exposure is referred to
the ~~U. Quarry~~ *Delphi* horizon.

Joints

Top of Delphi
N 32 E 90°
N 33 E 90°

1043

Aug 30

1043

5B D9

In road at 1360' level. 2' hard
compact shales with
Carbonatoceras
H. dehani
P. flabellum
Probably \longrightarrow New Lynn.

5B E9.

Exposure of soft crumbly shales
with abundant small fossils

Rhodops
H. oblongatus 1300'
C. brattii
G. constuta

These are the soft shales that
lie on the Burchard Quarry ls.

About 8' below this in the
road about a foot of this ls.
is exposed. 1290'

5B E9'

Along R.R. at 1260' large
exposure of soft grey shales
weathering to small fragments.

Fauna

C. setigerus
L. labra

A. umbonata

These belong to the upper
limits of the Peckasport
shales.

Aug 30.

1044

56 Dg' 1312'

Mottville Quarry ls.

56 C5. 1045

Aug 31

1045

16th step. Soft gray-blue shale with conchoidal weathering. Weather to brown irregular pieces. The surface is irregular from weathering of chunky blocks where exposed.

Fossils. - moderately abundant

- ✓ *C. mucronatus*
- ✓ *T. carinatus* - small.
- Grammysia* sp.
- P. nana*
- L. harringtoni*
- ✓ *S. purpurea*
- ✓ *A. subornata* cc.
- ✓ *P. flabellum*
- ✓ *Aviculoplecter* sp.
- ✓ *S. perrinites*
- ✓ Large *Spinifer*
- ✓ *C. setigera*.

Joints not well shown

N 89 W (?) only seen once in stream-bed.

N 27 1/2 W spaced in stream 9" to a foot

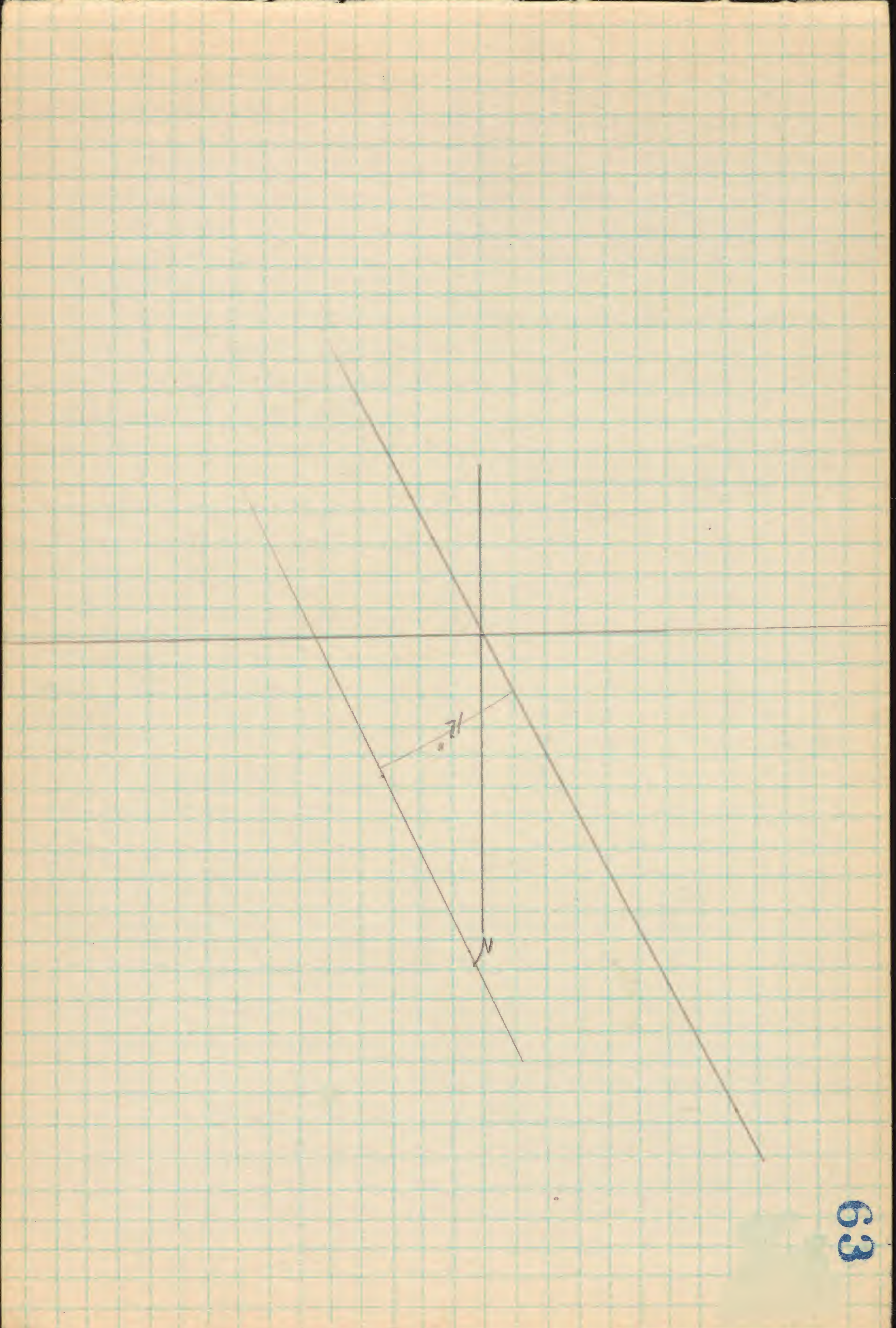
These are exposed for 15' ↑

19 steps same rock.

1308' shale is fissile splitting in thin flat chips of a black color.

- Leiorhynchus* cc.
- P. fragilis* c
- A. subornata*

The shale is soft it can be crumbled to clay in the hand.



Aug 31.

1046

56 B1

1230'

soft grey shale with
few fossils

Levinsynclonus

Loxonema

Orthoceras

Possibly Peckaport horizon.

Sept 3

1047

5C

1560 - 1580' West Eaton
Arenaceous shales with a
bed of flaggy ss breaking into
thin 1" slabs. A short search
revealed only
Camarotoechia sp.
Crinoid stem segments.
H. deKayi in debris

5dA4

1290' Near top of New Gyr
horizon as shown by large
Lindoptena obsoleta, big *Spirifer*
& *Attheyia* cora.

5dF8

Road intersection
1215' shales of Eaton ls type
in a ten foot exposure. Also
seen below RR tracks

Aug 31

1048

5a F5.

Morrisville

1330'

Quarry 50 yds by 25' including
shales of New Synn about
and Pigeon St. at surface
Complete *Cyphosaurus* found here

Joints N $18\frac{1}{2}$ E 90° .

5a E3+4

Top of New Synn horizon.

Sept 3.

5 d A8

1300' grey soft weathered
shales without fossils,
becoming coarser in a 20'
cascade at the top of
which the stone is
composed of hard sand-
stone with lime lenses.
E. bucklaeni was found
here establishing the 80 a
horizon. Top at 1330'.

Above this are dark shales.
very soft and fissile &

1050

57250
1150
1300
1400



98

Aug 11.

1051

62 B11

1205'

6' vertical of grey sandy shales splitting into irregular and large pieces. The fossils are most abundant.

P. lineata cc.

P. flatellaria (fragments)

P. discidium

M. cornutaria

C. annulata

Cambria sp.

Strophodont cf. *gopher*

1225' a cascade in strata in form of a hard limy ledge of 30'.

1246' 3' vertical of soft dark shales with large specimens of *L. laura*. These shales are the same as those at Peck's port railway crossing. Fossils are most abundant.

35' top from 1360' cascade of hard limy rock intersected by the transitional stone. Rechecked to between Tullahoma & Sh. The stone is hard and has many of *Camarchoceras* & small *spirifers*.

Above the ls are found soft blue shales in which *Productella* are common. There are no fossils for 15'.

Just above road at about 1450' sandy crumbly shales sparse in fossils.
C. congregata cc.

1052

P. sublaevigata

P. insignis

P. alba

Jointly - Best developed
alt N 31 E
~~alt~~ N 53 W.

P. flabellum

C. truncatata

C. planicosta

C. lamellosa

(Belongs to L.M. on New York.)

Aug 12.

1053

6a F 9

Outcrop 25' vertical, a short distance up the ravine

Color - black

Texture - very fine - composed of a fine black clay

Weathering - into very thin chips which are small and irregular

Beds are well consolidated where not exposed to the weather

Fossils: - very sparse

A. umbonata cc

L. laura (round & small)

C. scitulus

6a B11

Aug 18

1054

Limy band rechecked to "1400'
5-75 paces below road intersection
at 6a B12 and '6 steps' below
the same.

Aug 18.

6a F10.

10' hard calcareous-sandy shale
representing top of New Gym
horizon

N. arguta

Actinopteria sp.

Clay tubes and patches, pitted
surface weathering

Aug 18.

6a F9

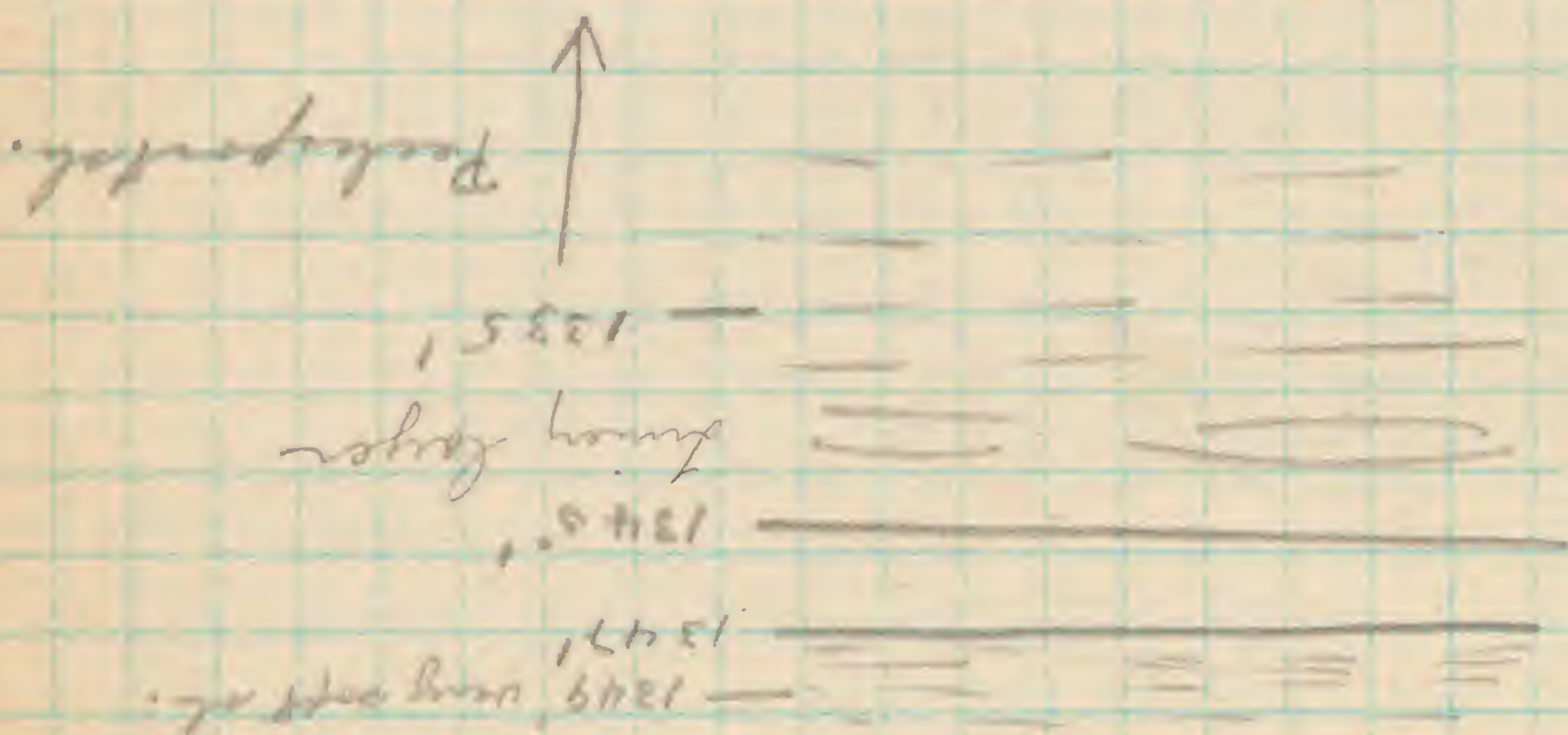
1270' - 1335' soft dark Peckport
shales with few fossils.

at 1335' *P. flabellum* was noted
showing influx of large animals.
1340' hard layers of calcareous-
arenaceous rock. Near 1338 a
lense of pure arenaceous
limestone was noted

1345 transition from calcareous
rock to soft shale as a calcareous
argillaceous rock with *Spinifers*
and *camarotoechias* & *Pterinea*.
Joints spaced about 3 or 4 ft
trend N33E
N31E

A head of *F. hamiltoniae* in the
compact ls is 1' in diameter.

1440
1345
95



now 1440'

1055

Fossils from shale in
hard band at 1345'

H. dekeyi

S. andaculus

P. flabellum

D. truncato

C. congregata

M. concentrica

T. caninus

The shales immediately on
the hard band with *Favosites*
gives way to very fine
shales with *Ostracods*

Eaton shales run up to
about 1375' and blend into
New Lynn horizon

Sept 10.

1056

6b B8

1390' Pecksport sh.

C. scitulus

joints N 86 E.

These are exposed vertically
for 30 or 40' in and along
the road.

6b B9

1250' Pecksport sh. in
road opposite first house
from State highway

1382
1290
1250

Sept. 10.

1057

Pine Woods.

6 to B 9:-

1205' at road intersection hard shales, grey in color with many *Tadmonius*. Forty feet below these on road toward Morrisville the shales are blue and quite soft, becoming harder as progress is made east toward road intersection above.

Solville ss

Large *Spirifers* and rounded concretions are common in the harder beds.

Joints N56E 80°
N37E 90°+
N36E 90°.
N41E

A complementary set to N35-40 E is less well developed.

Sept. 10.

1058

6 b D 9

Grey arenaceous shale with
P. liata
C. mucronatus
at 1220'

Sept 10.

6 b E 8

1245' Hard, grey Solsville
arenaceous sh. with *Taenium*.

1256' 15' exposure of ~~Reckersport~~
shales, crumbling to small
fragments.

6 b D 6.

1408' ~~St. Louis~~ ^{Woodville} boundary stone
forms a flat in the ravine
and springs gush from above
it.

The hard Solsville shale forms
a conspicuous ridge ~~east~~
around hill facing Bonakville
rising from 1256' to 1277'

1408
1245
163

Sept 10.

1059

6 b B 9

12' feet soft shale, olive
in color where exposed

N. triquetra

N. elongatus

Orbiculoides

Aulopora

Probably Cardiff in age

Sept. 10.

1060

66 A2

1268' - foot of cascade showing arenaceous shale.

P. lirata is common at this level.

1301' Top of cascade of hard arenaceous sh. On these rest Pecksport shales. The cascade is 33' high and is practically of the same kind of stone throughout.

66 B2

1442' hard calcareous ls of Burchard Quarry & Payne St. Rock of Eaton (115) kind is exposed for 40' above this second falls. Two corals (cup) were found in the soft shale 2' (vertical) above the falls.

Sept. 8

1061

Folsville 1410'

6a d1

Grey arenaceous shale (siltst)
with few fossils which are
correlated with the arenaceous
shales below Peckport
horizon as noted at Monroville
and at 3d F11.

The exposure is fully 100
yds forming a conspicuous
ridge on the side hill

Joints N 25° E
N 30 E
N 27 E

With a complementary set
poorly developed exhibiting
large rectangular blocks
to split off.

Fossils:-

S. crotalum
S. minutum
Loxonema sp.
P. livata
P. flabellum (Unusual ornament)
A. princeps
C. mucronatus
Comularia sp.
M. concentrica.

Sept 8

1062

6a B2.

1200'

Dark, blackish blue fissile
shale crumbling to thin fragments
25-30' vertically.
Often weathers with a red
rust.

Lecorhynchus (large) only
fossil noted. These may be
Cardiff.

Sept 10.

1063

66 F7 Soft, dark crumbly shales, probably Cardiff.

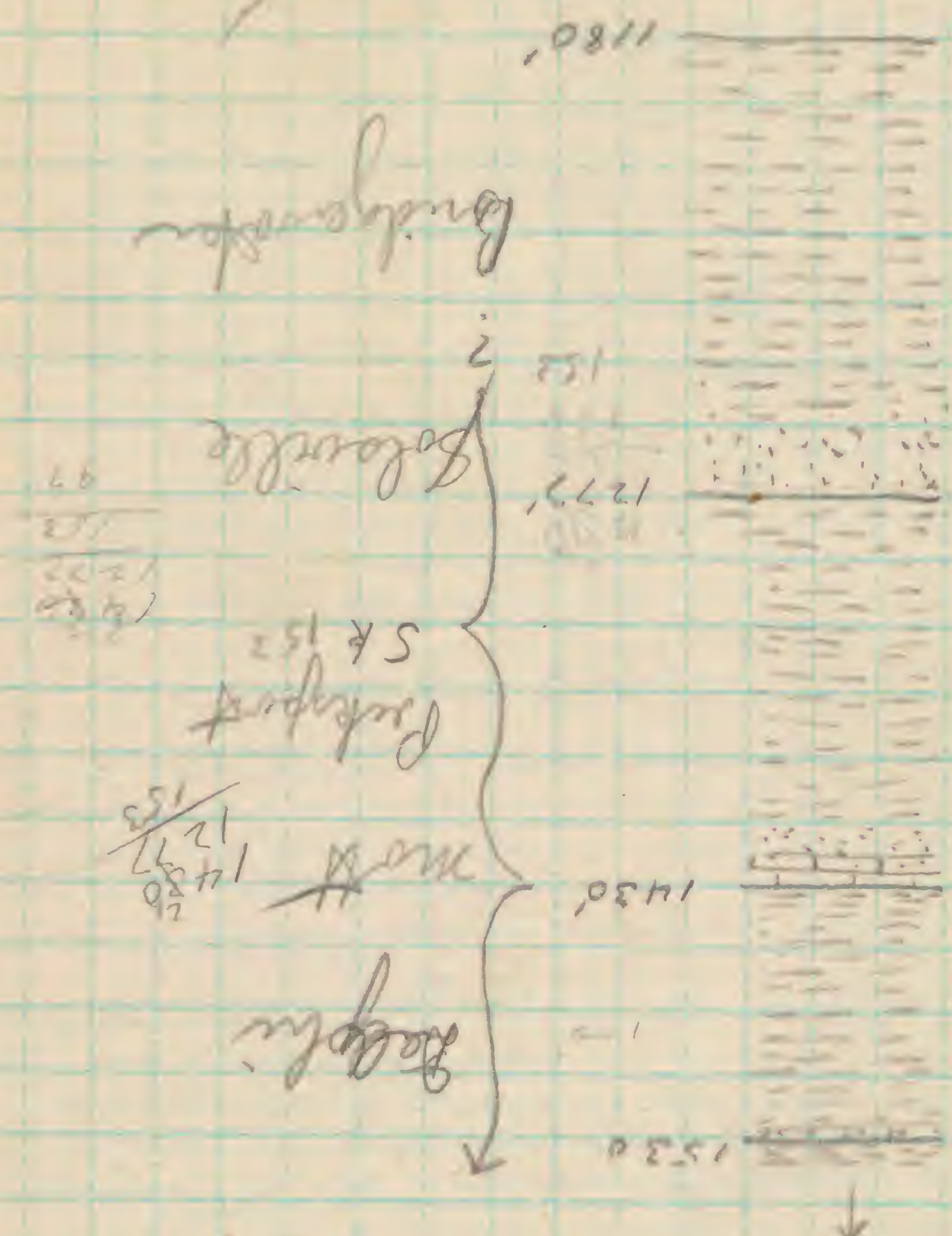
66 F6 Same.

66 F5: -1277' Hard band of calcareous(?) sandy shale with *Taonurus* and very large *Spirifers* which correlated with those at Solville

1295' Peckaport sh. with *L. laurae* as a small outcrop in stream-bed

66 E3 In a side ravine crossing the road at 1408' the Mottville ~~limestone~~ stone is found at 1430'. Above 1430' are found shales of the Eaton ls type
66 E2 till at about 1530' the top of New Gym horizon is seen. Soft sh. on the New Gym stone are much weathered and their true character could not be determined.

This horizon (Sk-Lnd) is also found in the main stream at the same level 1430'.



1064

Sept. 10.

66 E 6

Soft sh grading into hard
sandy sh at 1275' forming
a fldt in ravine. Same
stone as that on ridges at
Solaville.

1302' small exposure of Peckaport
shale.

1319' small exposure of Peckaport
sh. with *L. laura* (very large)
and. *B. sulcomarginata*
M. oblongatus.
A. umbonata.

At 1430 stream passes under
short road leading to farmhouse.
Lud. sh. contact should appear
here but none was definitely seen.
However drift boulders of this
stone are common here. A few
large pieces may be bed-rock
but it is difficult to make sure.

Aug 16.

1065

Chase's Glen.

6 d 87: - 1220' level of falls showing
so. with head of *T. hirsutulus*.
The stone at falls level is
calcareo-arenaceous stone. Below
the falls are shales and sandy
shales sparse of fossils. The
sequence in latter displayed
at Upper Chase's Glen.

6 d F 7. 1220' Same bed as at Chase's
Glen, for fauna see Thesis.

Transitional from this calcareo
arenaceous stone is a soft
shale bearing a fauna of
small animals with many
Ostracods. This fauna becomes
larger and gives the Eaton ls
shales as the stone becomes
more arenaceous.

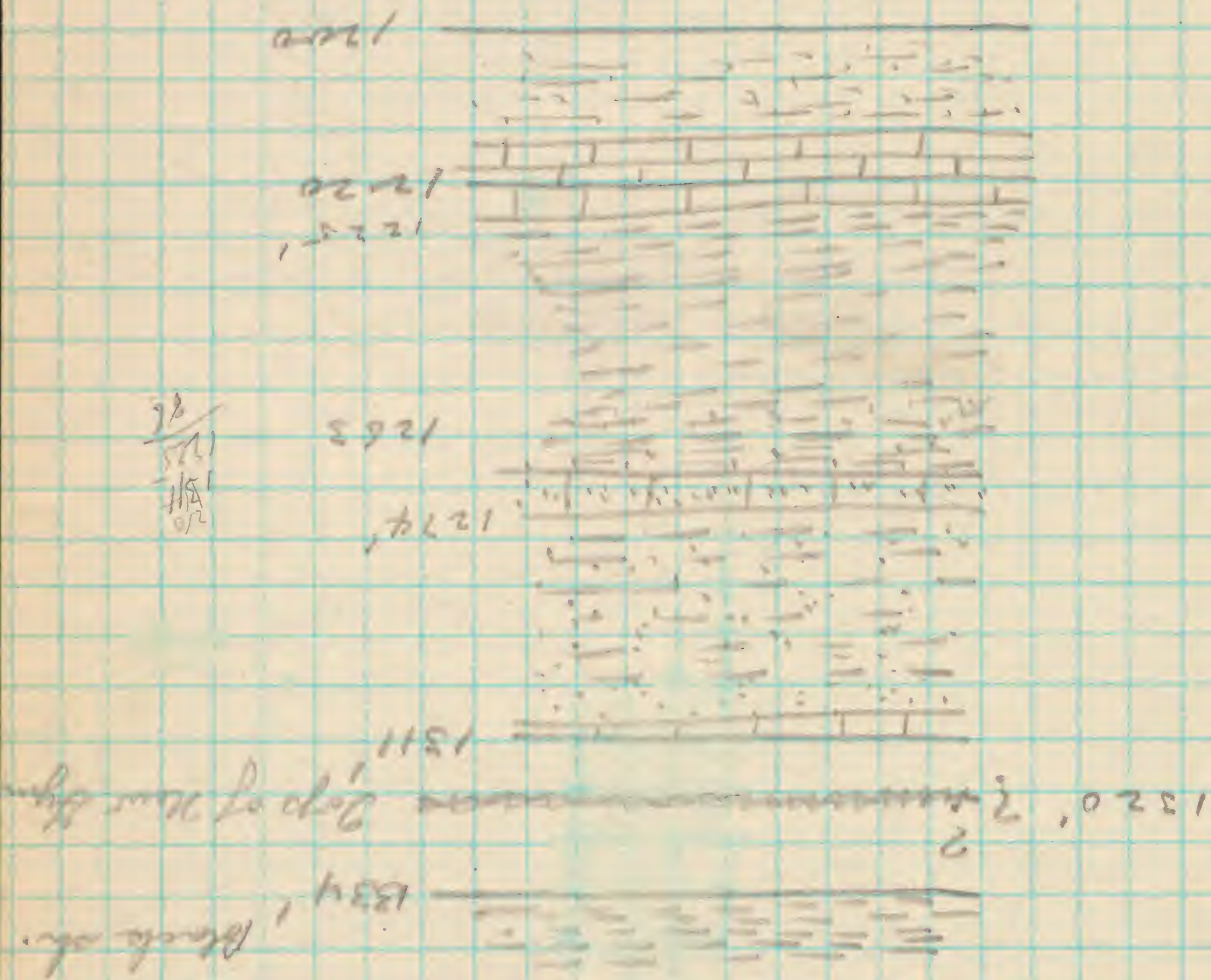
Stone below the falls has
few fossils and is hard and
sandy as that at 6 d 89.

The soft shale with *Pholidops*
is 5' above the falls.

1236' shale of 1 s (Eaton) is well
established. *Pholidops* is here
abundant when the shales have
become bluish and more
compact.

1263 the *Dolphi* fauna and
shales are marked by many
gastropods and also by the
advent of large *Pekypods*
showing the coming in of the

Upper Elmore Station



joint at this level N 34 1/2 E
M. subolata is common here.

at 1274' a calcareous massive
band of small thickness forms
a cascade. It is probably
only a local hardening of the
bed.

1280' shales are hard with
G. bisulcata, P. liata etc.
showing the soft blue shale
bed of the New Hym Quarry.

1296' these rocks have become
rather sandy and at
1311' the drif bed capping
the New Hym forms the
brink of a cascade and
here the ravine opens
to form a flat area for
about 50 yds. due without
doubt to this more
resistant band.

L. macroptera is noted at
1313' and here the stone
has the peculiar elongate
tubes in it.

L. perplana in debris
about these beds in
hard calcareous stone
indicates the top of the
New Hym horizon.

1334' blue black shales
with very few fossils. See
them in for list. Joint N 45 E
These continue up ravine
about 20' vertically where
ravine comes to an end.

Level of about 1300 of hill
between Chase's Glen and
Upper Chase's Glen is rimmed
with outcrops having large
Pelecypods and many trilobite
of the H. de la Roche kind. And the
top of the New York band
layers forms an indistinct
terrace.

12/12/1

Blue land

at

with boxes of

commodities

12/12/1

1227' —————
1231' —————
1241' —————

$\frac{1273}{2}$
 $\frac{1311}{2}$

1355
1356

Aug. 16.

1068

6dE 6:- Burchard's Quarry.
1212' bottom of Quarry. 7 feet
from bottom to 1225' level
are taken up by coarse
alternations of sandy stone
and hard shales. At 1220' it
has layers or lenses of
made up of *Camarotoechia*
and *Spirifer* and *Orthis*. 1222-
1227' is taken up with hard
calcareous-sandy shale with
blue shale stringers and
potholes which bears large
animals. On this shale
are about 3-4' of calcareous
shales representing the lower
bed with an increase in
shale and decreasing lime
giving way to soft crumbly
shales with small fossils.

The hard band is characterized
by large fossils. The top of
the hard band and while
it blends with the shale
occurs the corals.

Above 6dE 6 at 1273' grey
shales with large *Pelecypoda*
and abundance of *Bryozoa*.
These are the shales found
at or below the road at
Payne St. where *C. tenuis*
is common.

1311' hard ss. layers of 6" on
top with compact ss. below
with large *Spirifers* and
Bryozoa appears to be
top of Delphi.

6d F6

1.1
1.1
1.1
1.1
1.1

1355 8' shales, grey from weathering, very bouldy appearance. 1069
Lingula sp. was the only fossil noted.

Rock appearing at 1311 is top of *Lingula*. Hard layers at 1355 from base of hill

Joints at Burchard's

$N 36\frac{1}{2}^{\circ} E$
 $N 39^{\circ} E$ } best defined

$N 52^{\circ} W$ Less readily defined occasionally well developed

Aug 17.

1070

6d 25.-

Near Burchard farmhouse
about 400 yds N 59 W at level
of 1255' and forming a
terrace on the hillside hard
calcareous layer found at
6d E 6 at 1231'

at 1293'-1300 shales of Eaton 10.
form another terrace.

Aug 17.

1071

6dD3.

Pecksport Railroad crossing
soft shale etc. (see thesis)

Jointing

Extent - thru whole outcrop
Spacing - irregular 8-10 on feet.

True main and most
prominent set N40E

All other sets have curved
planes or are poorly defined
One set N63W dips 78° S.
N57W 78° N or the
exact reverse dip in the
other case

N57W 83° S

These latter sets are not
important for they are not
consistently or regularly
developed.

1072

Aug 17

6dD30

Small exposure hard
calcareous - arenaceous shale
the same as found at 6dE6.
The exposure is very small
This rock here forms a
terrace on the hill.

Aug 17.

1073

6d G4:-

Black shales in stream bed,
much weathered to gray rock
D. lirata in hard sandy
rock forming a cascade
in the brook.

At about 1460' a hard ls is in
the bed of the brook, it is
gray, arenaceous with
H. deKayi and forms the
flat between the hills.

This rock lies on the New
Haven beds found below.

The ls^{sandy} layer is approached
by an increasing sand
content in the rock with
corresponding hardness of the
stone, forming the whole
flat lying between the
ridges.

at 1360' in this ravine coarse
hard sandy stone irregular
of fracture. May belong to
New Haven horizon.

Aug 18.

1074

6d H2. Below 1300' in stream bed are noted many rectangular boulders of stone referred to the calcareo-arenaceous rock of Birchard's Quarry. The flat in 6d F3 and its continuation in 6d G3 is composed of this hard rock without doubt.

1380' a small falls in brook is referred to top by ~~200~~ ~~Delphi~~ horizon and here is exposed for 8 or 10 feet. It too, forms a small flat.

Aug 14.

1075

6d 19:-

Blocky shales, much weathered sparse of fossils & in the upper layers (mean the falls they are compact splitting into very large layers, and very resistant to a blow of the hammer.

A. unibonata is a very abundant fossil but is characterized by its small size, most of them being only $\frac{1}{8}$ " in width. A large subil referred to *E. rugulata* is common.

Encrinurus cf. *hiata*
H. dekeyi cc.

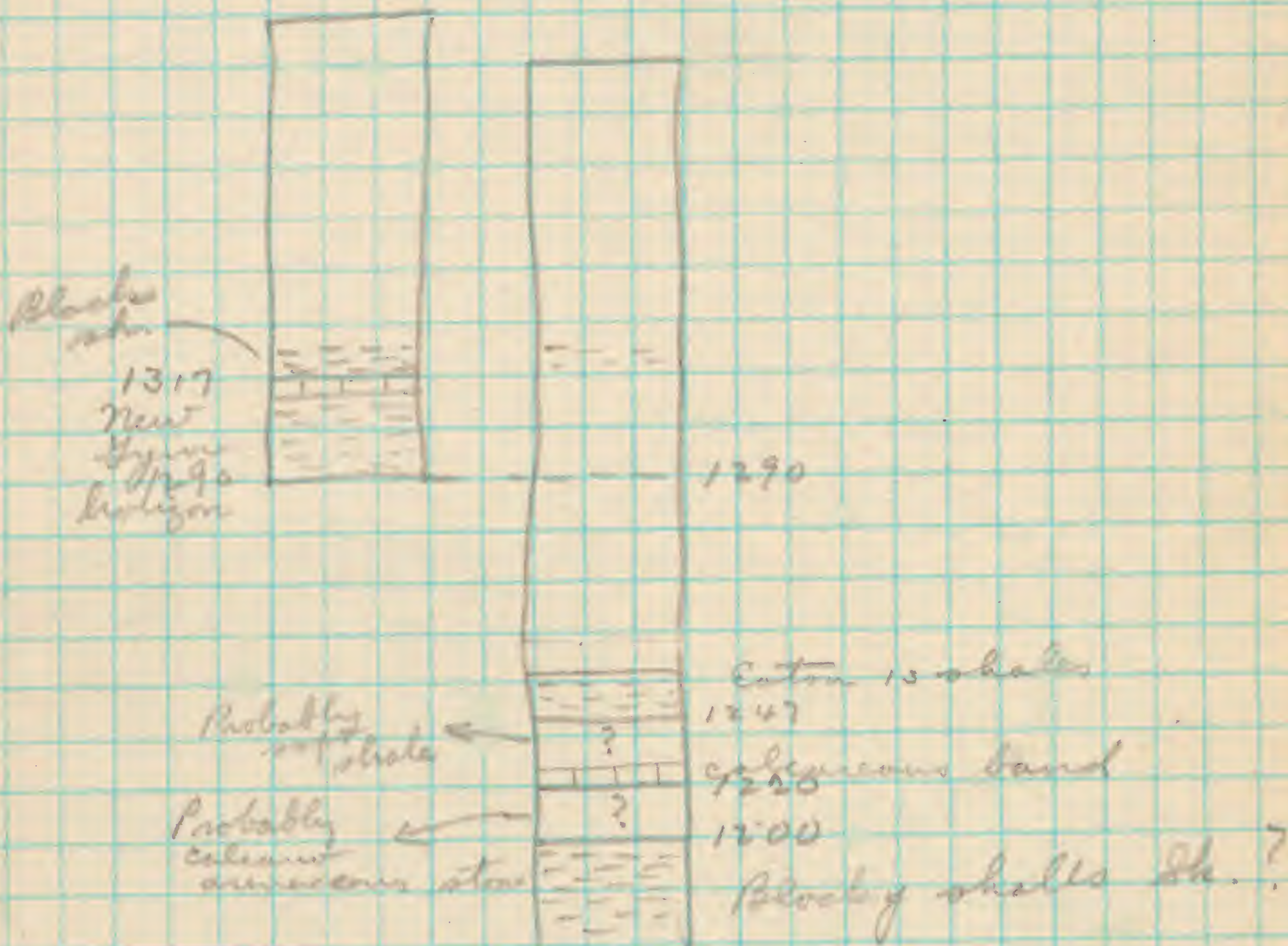
6d 19①

8' vertical 50 yds. horizontal calcareo-arenaceous rock, hard and resistant containing elongate or irregular black carbonaceous masses which are characteristic of this stone.

Elevation 1215-1220'

Fossils:- predominantly brachiopoda, *Spirifer* & *crinoid* stems most common

Carbonaceous matter is not limited to vertical or horizontal tubules or masses but is often implanted on the fossils. This material may represent seaweed.



C. boothi
S. peyplana
F. hamiltoniae

1076

Rock along stream level is of sandstone in which are lenses of fossils which make ls. layers. Vertically in the sequence the stone becomes more argillaceous & carbonaceous, the black layers & tubes being absent below. The top layer shows considerable clay and the sequence is followed by a shale bed.

The only prominent set of joints trends N37½W.

6dd9⁰

1247' shales of 1st (Eaton) formation with *Pholidops*. On hillside above this outcrop small outcrops of ^{thin} grayish rock.

1290' shales of new Gyr encountered marked by large fossils and by increasing hardness.

And end at 1317' in the thick hard band forming a cascade in the stream.

6dd8

at 1317' black crumbly shales are met of the same kind as found above the new Gyr at East Glen. These are not very fossiliferous.

These are also found at

Payne St and in Upper
Class Glen.

1077

Fauna

N. corbuleformis

N. trigonata

M. pyramica

N. oblongatus

Orthoceras sp.

A. umbonata

Lingula sp.

N. bellistriata

Joints N36E
N58W

Black rock continues up to 1375'
where it has become hard forming
cascades. At 1410' soft shale chips in
the soil indicate the presence of this
Bemyn below. The cascades are of
rather sandy rock, with few
fossils.

6d B 10

1280'

800

1078

Slabby ss below bearing
 lenses of fossils, in all about
 3' thick. On this 2-2 1/2' of
 hard heavy ss. followed by
 a few inches (3) of shale
 bluish in color, much
 weathered leaving

S. pennatus cc.

P. flabellum

Y. arguta

Rhipidomella

Orthoceras.

In ls.

C. boothi

P. flabellum.

Y. arguta

S. pennatus

Upper heavy sand bed
 contain many *S. pennatus*
 and *S. perplanus*.

6d B 11.

1328'

just above 9 + B 1st soft
 blue shales with few
 fossils.

S. pennatus

Aug 9.

1079

6CD10
~~6dC~~

Small exposure little
like shale with few fossils
Probably belongs with 6dC.

6CE10

1382' ^{limy} Hard shales with
P. flabellum
A. princeps
L. granulatus
L. crotatus

These are correlated with
New York horizon and 7C
at Lake Meramec

SE of thesis (which see) on SW
of gully lies between 6CE10 &
6CD10 at about 1370'

Aug 9.

6CB12

Exposure 10 ft on road near
Mr. H. Polysak residence. Sh. shales
see thesis for lists. Nearly
10' of sh. at 1180-1190'.

1218' Paynes quarry.

15' from floor of quarry 1233'
calcareous ledge. Below
is a hard blocky shale
scarce in fossils. The sh.
shales are hard and rather
sandy and become limy
by deposition.
See thesis.

Aug 14.

6 C D5

Level 1353'

Vert. 5'

Hor. 25'

To west one small exposure at same level.

Color - blue grey

Weathering - light grey with coarse arenaceous appearance

Occ. - One joint faces and small weathered pieces irregular in size & shape

Well consolidated being tough to the hammer.

*P. arguta**P. trochii**C. carinatus**C. congregata**N. arguta**Protolophodendron**B. sulcomarginata**C. tenuistriata**P. flabellum*

Topmost bed: -

*I. carinatus**C. congregata* cc*P. flabellum**C. tenuistriata* cc*B. sulcomarginata**N. arguta* c*C. elongata**A. decussata**I. exigua* cc*S. cristatum**L. obsoleta**A. erectum*

M. macrostoma
Nephritina sp.
D. bisulcata

Abundant evidence of wood is seen
 in the rock.

C. coronatus
S. perplana
C. thomallianae

This fauna has the aspect
 of that at the West Lynn or
 that at Jones Quarry

Joints :- beds here not well
 jointed and irregular.

N52W and N35E.

A layer exposed about 20'
 above the top of CCC5 about
 100 yds to the west in very bad
 bed and compact forming
 the level for springs.

CCC5:

10' above this compact shales
 not breaking easily either to
 the hammer or to the force
 of weathering.

Fauna

S. perplana
C. fasciculatus
L. macrostoma
S. flatellus
S. granulatus
A. boydi
N. angusta
L. adductus
A. brevis

On top of the are a few inches
 of shaly sandstone

1082

This hand plane found at
base of the Hill. It is a
flat top with a small
of the hill at 1390-1410'

Aug 14.

1083

6CA8 - LMI.

1292' sandy shales in which
H. dekayi, *B. sulcomarginata*
and *Orthoceras* are prominent

1300' These shales have
N. aquila, *A. princeps*, *J. carinata*
C. tenuistria. The same
form and sequence as at
6CD5 + 6CC5

Only one set of joints is here
well developed and trends
N33E.

6CA9.

1320' The large Quarry known
as LMI in thesis. 30 yds
horizontal and 7 or 8' vertical
color: - bluish sandy shale
Weathers to irregular fragments
at 1320' but on the top layer
or ridges it is hard & block
same as the hard layer at
the New Hym.

Jaumnus is an organic
structure commonly noted
here.

Fossils (see thesis).

Roemerella grandis
Pelecypods are the most
abundant

Stratigraphy: - same as New Hym
exposed.

Relation to topography: - This
level forms the top of low
hills at 6CC5 and at this point

	1323'
Sandy sh.	
Sandstone	1328 1/2'
	1328'
Transition	1325'
	1319'
Blue massive sh.	
	1313'

Aug 9.

1084

6CJ4 87' above road level a cascade
of some 45 ft. showing the following
section.

10' dark argillaceous shales.

5' 5" " " "

alternating with dark argillaceous
bands. Fossils are not abundant

A large *Castropora* at 3rd "step"

4th step shows same as below.

5" " calcareous sandy shale

8" " - interval between 5 and

8th steps show sandy rocks
breaking in large coarse slabs

capped at 1369' by a calcareous
band characterized by tubes

filled with shale at that at 7 ft.
Below *Spinifers* and *Camartochia*

are abundant often as lenses.

The lime band forms the brink
of the falls at this place.

1371' shale crumpling as at

15 (Eaton) in an excellent

exposure of 15' vertical. The very

soft shales with the drafted

fossils are not exposed.

1393-1400' arenaceous shales showing

fossils of *gym* coming in.

A second falls exists at 1400'

made up of shale.

Aug 9.

1085

6C 28

1455' very soft black shale
with *n. triquetra*. *Ostracoda*
S. perimatus *M. oblongus*
Parenka sp. *L. lanha*
T. submarginata

This is the soft shale occurring
at 15' at Eaton
P. fragilis

A boulder of limy ss
with *E. libellulacili*
is probably from the
hard layer below this
sh. although found in
the stream bed near it.
It was probably glacially
lifted.

The shale is only exposed
for about 20' and is only
found as a fringe along
the stream bank of a few
inches thickness. It is
so soft that it is very
readily worn. This sh
is found on the road at
6C 28 on the calcareous
band and hard ss. This
must be the sequence seen
at 80a.

At 1400' where ls. should
be seen the stream is in
a flat swamp, no doubt
due to ls.

A 13 or 15' exposure seen
at 1455.

Aug 9.

1086

9a 71

Road intersection, small exposure, few fossils. Hard, arenaceous shales 1500'

Aug 9.

6C 48.

Small exposure in road
Dully at 1400'
One foot of hard slabby ss. with
P. flabellum cc. & *Leiopteria*
capped by a calcareous band
much leached, with many
fossils of 8-10" and on this
blue shales with

A. umbonata

P. constricta

S. pinnatus cc

C. scitulus

C. mucronatus c

M. pygmaea

O. helix ?

See thesis notes.

Aug 14

6CC3

Hard carbonaceous shale that
at L.M. 1? at level of 1380-1390
At the road intersection here
the topography is marked
by a large flat which
is probably formed beneath
the south of this stone.

The rock splits with an
unusual fracture and
when leached of lime
is markedly sandy but
does not show the flat
layers as the sands of the
U.D. Quarry do.

Fossils

T. exigua very abundant
Actinopteria blauscata?

S. perplana

Cambricaria

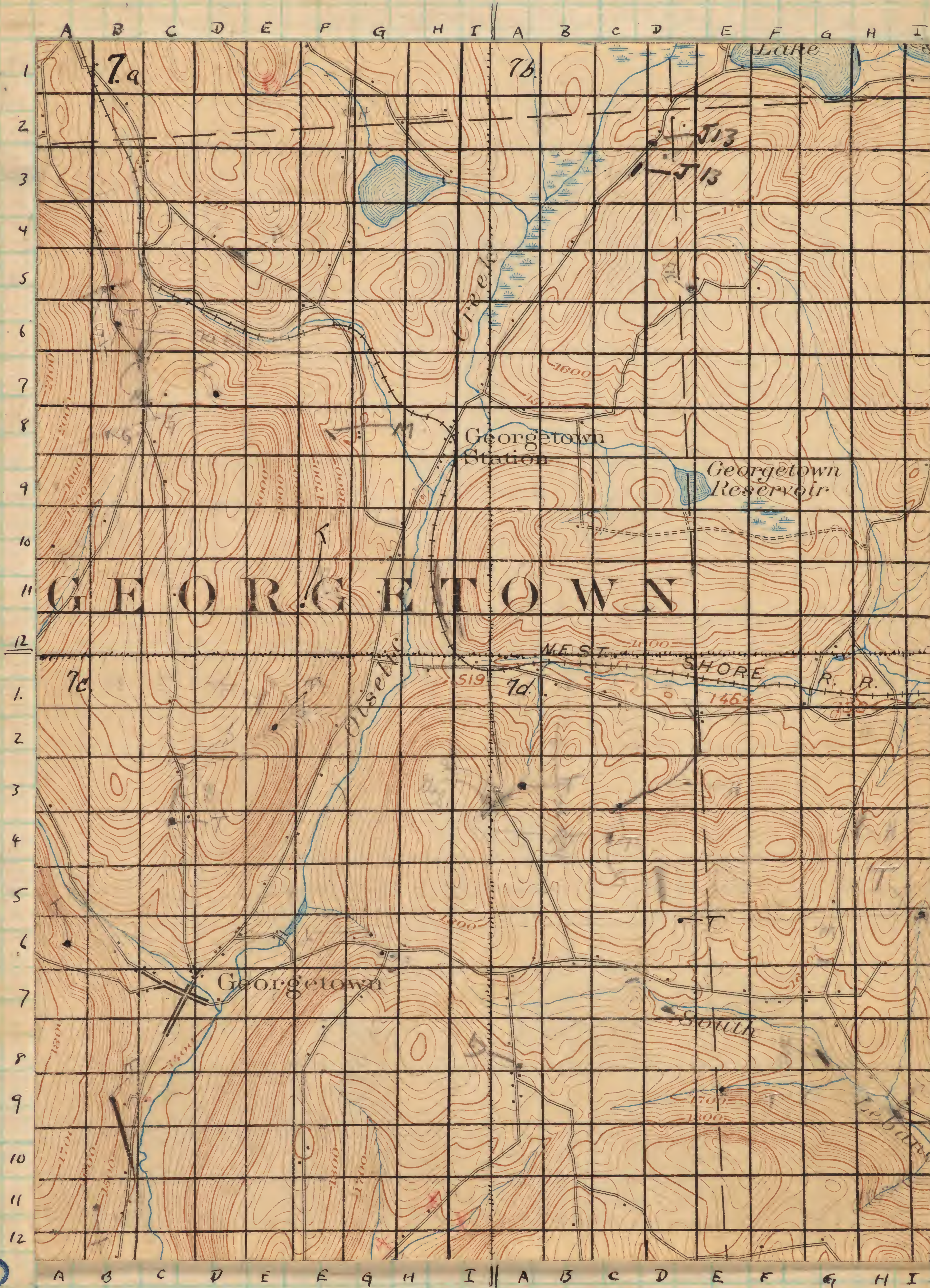
Spirifer (undetermined)?

Leptana lamiltoniae

T. carinata

Dark tubes appearing

like vegetation and blue
marble.





August I

1089

7CB9

24 steps above road level
excellent exposure of Tully 19-20
thick composed of beds of
lime and calcareous shales.
The exposure here is of
about equals as to that
the limestone is exposed
on a crude cliff at
has not been cut for
any notable distance
upstream.

20 steps, above base of Tully
Grey, slaty ss.
These continue to 27 steps
and are found 40' above
this level to top of hill
as heavy blocky ss
and coarse slaty ss.
By slaty is meant
bedding in thin slabs.
The bedding here is
filled with large
blocks of ss as follows.

Over a hundred ft. of
Moccasin are exposed here
this is by far the best
exposure of Tully found.

7C B11

20 steps above road level of
1395' are exposed 15' of
Gully. Hamilton is exposed
below in small patches.
The Gully is seen only in a
narrow gully.

Aug. 3.

1091

7C A6

23 steps + 1' Tully ls. which is
over 28' thick to judge by the
5 steps by hand level and
large blocks of Tully found
above the 5th step. It is
difficult to see how these
blocks could be carried up
and hence must have
weathered out from place. The
Genesee-Tully contact was
not observed here, hence
the exact measure of the
thickness could not be
taken. Small exposures of
Mosses are noted below the Tully.
Genesee in a 12' exposure is
found about 50' vertically upstream.

Aug 3.

7a D7

45 steps - 2' from railroad level
 of 1515' or 1756' Tully ls. outcrop.
 Only 15 ft are exposed of heavy
 limestone with little calcareous
 shales, forming cascades in the
 brook. At 45 steps *Leiorhynchus*
 was found in considerable
 abundance. This zone sharp
 propels the Tully. No more
 is exposed nearly the entire
 section of the ravine.

15
 22
 15
 17
 40
 19

11 steps above base of Tully
 about 4' Genesee
 19 steps grey slaty sh.

a flat platform has been
 formed by the Tully.

Level of top of Tully is
 considerably higher than
 outcrops 7a D 3+4 which can
 be seen from small plateau
 near 7a D7

Aug 3.

1093

Ravine at 7A A5 + B5 shows Moscovian up to road at 1800' but above 1800' Genesee & Sherburne slabs are seen in the road bed. The Tully was not observed but must occur at or near the horizon of the road.

Revisited Aug 4.

10 ft. above road level ^{1810'} small exposures of Genesee core and this rock (taget) with Sherburne flags form the debris of the stream

18' below the road fossiliferous massive shales extend all down ravine

2 steps below road level Tully is found in place. Furthermore 1st thin level many blocks of Tully are found in the other bed.

Therefore the Tully exists between 1788 & 1810 but cannot occupy this whole distance as the Genesee is well established at 1810'. This then represents the continuation of the Tully.

a little shelf about 20 yds. north of ravine 7A B5 at 1800' must be due to Tully below—

A small ravine at 7A B6 shows Hamilton to about 1700 and Genesee cliffs are seen above 1800'. Tully was not observed.

All along this road are the small amphitheaters just off the road which serve as the receptacles for the streams that have cut shallow ravines lower down. The starting point of streams along the level of this road suggests a hard stratum below.

7a B6(E4)

A small ravine just south of 7a B6 shows a ~~small~~ exposure of Dully 20' below road level which is 1800'

Aug 4

7a B7

Shale is so. as gray coarse ss in flat slabs of ~~about~~ thickness interbedded with finer silty material having a fine thin cleavage. From 1790-1800 over 40' of rocks are exposed.

They continue upward intermittently to 1900'

7a C7

Fragmentary chips & blocks of ~~shale~~ shale. These may not be in place.

Aug 4.

1095

7d A8

a small patch of *Baccharis*
in road gutter.

Aug 4.

1096

On Norwich sheet

Streams intersect exactly on top of Dully, which is at 1500'. The Dully here is about 25 or 26' thick. The exposure is excellent and of considerable length. The rock in places, especially where shaley is much weathered and crumbles much like the Moscow below. Where the limestone is pure it maintains its compact character. The bottom of the mass here is at 1476'. St. cuboides in abundance in lower layers.

This limestone mass in all probability accounts for the flattening of the valley to the north of the exposure.

At 1544 the Hennessee is noted and is exposed on the side hill vertically for 40'. It is here a dark sh. alternating with ss. bands. At 1544 a 6" band of very hard ss is noted.

At 15 steps above 1520' a side gully shows an excellent exposure of the sandstones.

1 step 4' of slaty shales
1' of harder more compact ss. The slate in places has a somewhat curved or undulating fracture.

Step 2: 5' 5" coarse

slaty shales

3rd step the same as above. When 3' of these are seen capped by a slightly more compact band.

at 20 steps from 1320' a cascade of 5' consisting of thin bedded silty shale 1/2 foot with thin bed of dark shale capped by 1 1/2' of blocky ss. grey in color.

A joint set in the heavy beds trends N32E and the joints are spaced 4 + 5' apart. Minor sets spaced about a foot apart trend roughly N63W.

at 22 steps heavy beds of ss splitting in rectangular blocks. 1' by 1 1/2'. These blocks are an expression of the jointing noted above.

at 24 steps rock is lost.

1

July 21.

1098

A.

7C 6 G (G7) 13' Senessee shale, dark, fissile, some subtle bands near the base.
Joints N80E 80° and N21E 90°

Fossils - none.

Photo 1

From 1660' AT (Road level) in a direction S15W up ravine. 6 levels (5'5" x 6") = 32 1/2' above road a small cascade made up of 8-10' of rock of which 3' or 4' are like the Senessee beneath 3' of the four foot cascade at this point are of silty, blue grey sandstone. The sandstone forms a floor for the stream.

B

7C 7 G (G1)

Good Photo

11' above 7C 7 G (G1) 1 1/2' of blue sh. like the Senessee but more heavily bedded and slightly coarser. 8' above is 2 1/2' feet of shale like the Senessee but capped by a few inches of more arenaceous stone.

C

7C 7 G (F3)

22' above 7C 7 G (G1) 1 1/2' blue shale, fissile and brittle becoming increasingly arenaceous till at the top it is a fine ss.

Large ss. slabs in the rock indicate coarser rock above but it is covered.

2.

July 21

1099

7CF6(C8)

33' of soft, micaceous shales having
a very irregular fracture, they
exhibit a lamellar character
throughout the exposure. Purple
tint on weathering.
Fossils - very regular in places
showing several interesting sets.
N 71° E 20° S. N 14° E 90°

Fossils

Good
Photo

Taonurus	Platyceras sp.
P. contracta	m. contracta
S. penetrans	m. septiloides
T. cuneatus	C. cuneatus
P. puncta	C. recurva
P. rostrata	P. marginata
N. bellinotata	C. marginata
R. furcata	Many crinoid fragments.
T. attenuatus?	H. acis.
C. tenuistriata	Gammaria (small).
L. crotalaria	

T. cuneatus is of the broad variety.

Dully on road between 12-18 miles
from base of quarry
30 to top of hill

515
30
1550

1515
1485
1075

Dully in road bed is at level of 1545

Photo 2.

3.

July 21

1100

7C66(C3)

Tully ls.

Contact with Hamilton. Conforms to
 about four sandy shale with
 splite lints irregular black to a
 blue limestone. Large and heavy
 bedded. Fossils noted at the contact
 are *P. sars* in abundance, a
 gastropod? A large *spirifer*

Contact is $5 \times 11 = 55$ $5 \times 11 = 12.55 = 4' 7.9"$ or $63' 7"$ below road level or $1596'$

The Tully is $20' 8"$ thick at this point

The mass is bedded with thin layers
 of brittle ^{calcareous} shale. The stream bed
 taken advantage of the ~~under~~
 joints and many large blocks
 have been lifted and "floated"
 downstream. The surface of the
 stone in the brook is marked
 by a peculiar pitting probably due
 to local irregularities in the
 line or to shale pockets

	Tully	Photo	3	} Fair
Weathered	"	"	4	
	Tully-Venezue contact		5.	

July 21

1101

7C F 9410

G 9411 & 11912

H 11912

d 11912

} These beds show many changes
 of shale, fossils and often
 belonging to the same series,
 the upper part of the series
 consists of shale and some sand-
 stone are found. No fossils were
 noted. These sandstones probably
 belong to the "Shinarump"

5

July 21.

1102

7d 67

A large exposure 12' vertical of arenaceous shale in which *Trilobites* and large *Spinifers* are common. A large value of the concentration was also found.

30' up from the base of the above occurs a foot of softer, bluish shale which crumbles more readily. There is an extreme abundance of *Leiorhynchus*.

Note: - This sequence was also noted in the record at 7CHC(B3)

62

July 21

1103

7d 29 (8 on the 1st map). Blue shales with
irregular fracturing an outcrop
about 6' vertical.

Fossils

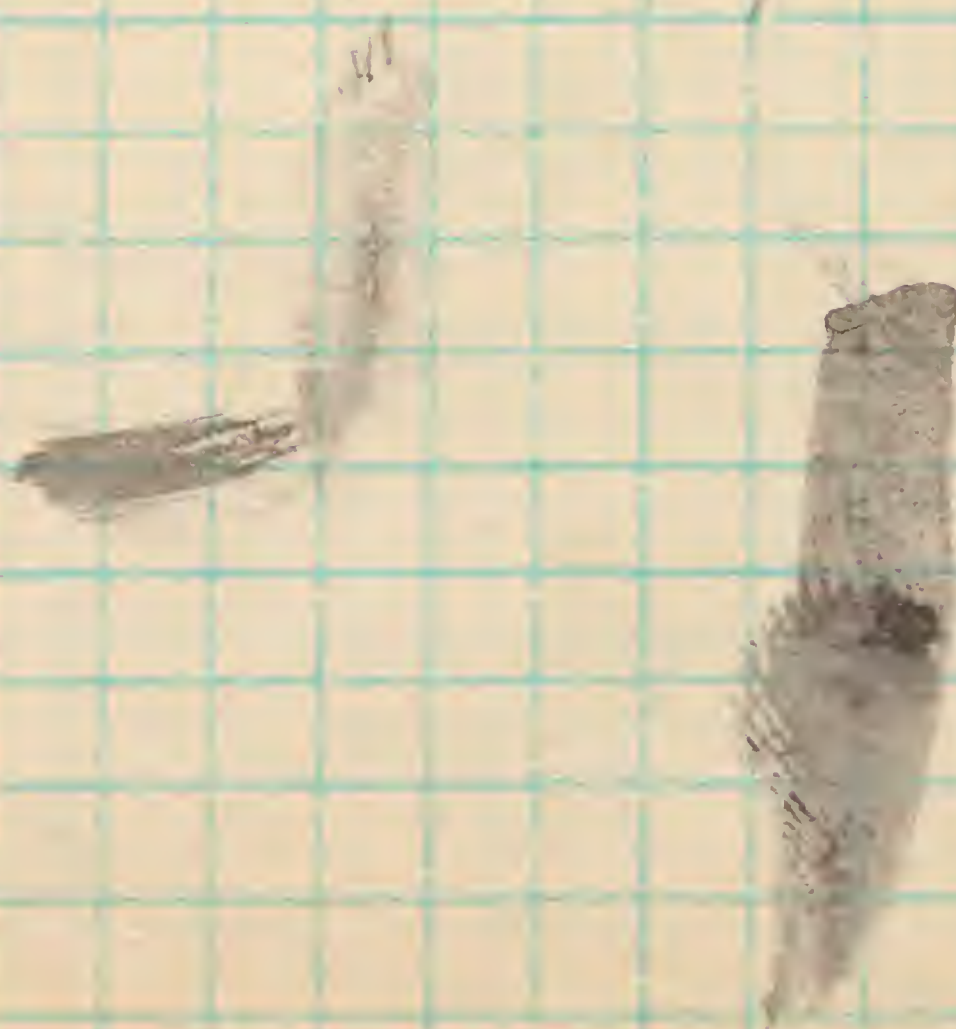
<i>S. pinnatus</i> cc	<i>C. undata</i> r
<i>S. carinatus</i> (Broad) c	<i>N. liata</i>
<i>A. reticularis</i> r	Crinoid fragments
<i>P. rostratus</i> r	<i>S. granulosa</i>
<i>P. tectatus</i> sp. r	<i>C. scutellum</i>
<i>S. cristatum</i> r	<i>N. bellistriata</i>
<i>Bryozoa</i> (many) r	
<i>N. oblongatus</i> r	

Note: - I believe this formation is
the same horizon as that of
7C F 6 (C8). These fossils, as also
those of the 7C F 6 (C8) outcrop, have
the same faunas as those of the
shales in the railroad cut at
Eastville although they are at a
much higher horizon.

B

7d E9

A few feet of Tully 1617'



7.

1104

July 22

7d H4

Blue shales irregular in fracture
with a rather sparse flora.

<i>Langula</i> sp.	<i>Crinoid</i> fragments
<i>Diobates micromatus</i>	<i>Tremula</i> (small)
<i>N. lanellata</i>	<i>T. carinata</i> (large)
<i>T. submarginata</i>	<i>Craniella</i> L.

July 22.

7a

7d H10

Blue shales, crumbling to small
irregular fragments, fossils very
abundant. These shales line the
stream and are found in the
bottom of the brook south
of the farmhouse.

The joint pattern is well shown
in the stream
N4E and N73°E

Another set further downstream
N12E, N74E 92°W

A more obscure set trends N57W

10/11/19

11/12/19

Fossils at 7d H10

1105

L. perplanus
C. subcircularis
P. constricta
O. tholus
P. muta
Bryozoa sp.
Tentaculites sp.
L. virens *cratellum*
P. lana cc.
L. gemmatus cc.
T. submarginata
O. carinata J.
N. oblongatus
N. triguttatus
Plant
P. emarginata
Leiopteria sp.
M. concentrica
C. scitulus
Camerothecia
O. parvula
P. dracoides
N. bellistata
N. varicosa
N. liata
Bryozoa
S. tholus
T. carinatus
P. verticillatus

July 22

1106

7d26

Tully contact with Hamilton
level of 1642' Barometer 1670-80

Picture 4 Roll up.

Thickness:- Stepped up by level
gave 4 readings. On top of the
Hs. was $1\frac{1}{2}'$ of soil but no
Genesee. Total thickness
 $21'8'' - 11'6'' = 20'2''$

The Tully here makes a long
series of low cascades as the
water has etched along the
bedding planes and joint
surfaces. The typical
pitting by solution weather-
ing is again displayed here.

The Hamilton was first
encountered at 1638' as an
arenaceous shale.

The Genesee shales with
abundant Lingulids are
found about 15 or 20 feet
above the base of the Tully.

82
1638
44

9.

July 24

1107

7dA4

Single exposure of Tully in stream bed.

Barometer 1668' ¹⁷³²
69

28 steps by level

The exposure is not favorable for measurement. The Senessee is found 20' vertically from base of Tully. It is marked by its shales and blue character. This is to be about 80 yds from base of Tully.

272
Picture
Not a
Roll 1.

1757

1757

Perhaps sand was not in the line. At Barometer level of 1732' these shales have become gray slabby sands, of which 35' are exposed in a cascade. At the base these are like the darker Senessee shales but become gray and coarse. At 1757' they are slabby sands in thin layers alternating with beds of somewhat darker softer shales which do not, however, have the same character as the black Senessee below. At the very brink of the fall the exposure is of olive fissile phyllites. This exposure is at head of road 1770'.

Massive shales were encountered at 1635' and could be followed indubitably in the stream.

Note:- The Senessee must come in in this series in the 30' cascade.

Contd

140
12
152
1640
1672

On the road at 1740' grey 1108
sandstones are found

at 1720' Seneca shale is
encountered. The road follows for
a short distance along a
shelf and to the east the hill
is a regular plateau some
20 or 30 ft. below the road.
This is probably formed by
the resistant Tully below and
this level.

79.D.5

Moscow sh. Blue, irregular of
fractures small exposures

Fossils

Prana cc

C. boethi

S. pennatus cc

Bryozoa

M. luata

Orthoceras sp.

Crinoid fragments c.

S. perplanus

D. laminatus

S. granuloso.

S. blunensis

M. rufibifida

A second exposure of the same

stone is just over the brow of

the hill. Here the rock breaks

into small chips. It is more

weathered than the first and is

grey in fractured section but

shows a purple hue on the

surface. This stone appears to

be the same as that at 79.B.6.C.

E. cristatum

Platyceras sp.

C. acuminatus

Plant stem 1/2" diameter

Rhipidomella sp.

A. reticulatus

R. fimbriata

G. exigua

L. orbiculatus

H. trigonatus

Graptolites sp.

Taenidium common

11.

Small black concretions like those at G. 1. The same noted in the higher beds. The outcrop is about 5' by 10'.

1109

July 24

7a B6

Moscow shales 12-15' vertical
arenaceous shales with few
fossils.

T. submarginata
Spinifer sp.

¹¹⁰
7a D4

A few feet of Moscow belonging
to 7a D5

July 24

1110

7a 711 At 1528' a thin band about 10 or 15' thick unconformity in the Moscow. The stone at this place is hard and blue like that of the Tully above. Below this band are nearly 140' of Moscow shales in admirable exposures.

18' above the base of the thin band the shales are dark suggesting the Genesee but they are heavy fossiliferous.

Joints Picture one roll 2.

Roughly N15E and N80W

The Tully contact is encountered at 1677'. All of the beds are not exposed nor is the Genesee seen in exposure at this place. About 20' thick. Stream bed cut both about 50 or 60 yds.

Picture 3 roll 2

Joints at 1547'

N18E and N51E

This ravine is excellent for Moscow exposure.

Photo 6. I made a hill. Tully may be in top terrace. Represents joint of hill covering 76A10+11?
76B10+11.

N 51 E

N 18 E

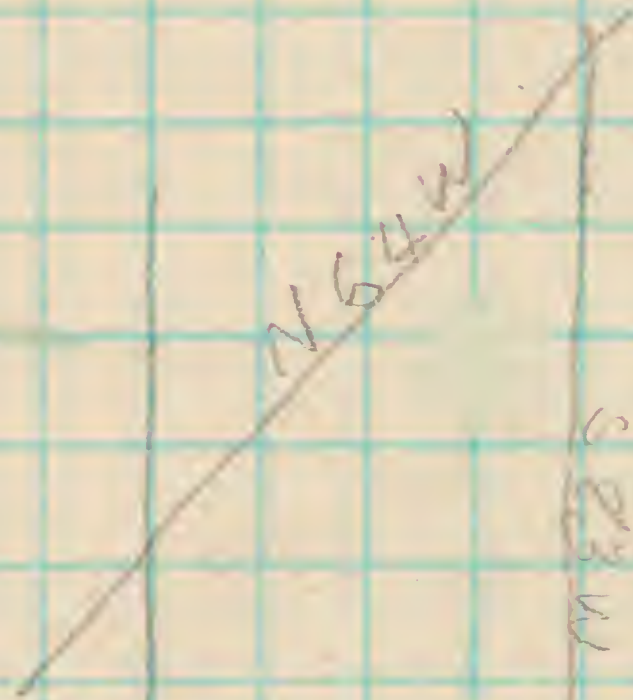
Picture 3
Roll 2

July 25

13.

9664

Contact Tully & Hamilton 25'
 Picture 1 & 2 Roll 3.
 Thickness at this point 26'.
 Joints in Tully



Contact of Moscow quite abrupt. The
 Genesee - Tully contact is quite
 transitional.

Joints in Genesee measure

N17E & N72W &

Tully contact with Moscow 12
 steps below 1700'

Tully contact 1635'
 Genesee 1661'

1755'

Observation :- contact with Genesee
 at about elevation of 1755' and
 continues up the hill.

July 31

20

7d D3

Georgetown Lebanon
line

10 steps above road level
a small quarry with horizontal
beds 7 or 8 feet thick. These
are mostly shales, some sandstones
with thin layers of fossiliferous
sandstone. The beds are
well consolidated but weathering
has broken them into small
blocks. In common is a common
organic structure.

Fossils

<i>T. cuneatus</i>	<i>M. mytiloides</i>
<i>S. pinnatus</i>	<i>H. trigonatus</i>
<i>H. debilis</i>	<i>C. scutellus</i>
<i>P. radiata</i>	<i>A. carinata</i>
<i>S. globosa</i>	<i>S. clausenensis</i>
<i>O. undulata</i>	<i>C. marginalis</i>
<i>Leiopteria</i> sp.	<i>C. tenuicostata</i>
<i>Plant. stria</i>	<i>P. emarginata</i>
<i>N. oblongatus</i>	<i>N. rotundus</i>
<i>O. parvulus</i>	<i>S. crotalus</i>
<i>Leiopteria</i> sp.	<i>M. concentrica</i>
<i>G. bisulcata</i>	<i>S. arcuata</i>
<i>S. granulosa</i>	<i>P. constantia</i>
<i>N. striata</i>	<i>H. ciliis</i>
<i>C. bellistriata</i>	<i>M. bellistriata</i>

Joints:-

Extent:- continuous through the
outcrop which is exposed
through all strata including
the fossils.

Attitudes:-

N 11 E N 69 E Both vertical
with S. 100 ft. exposed N 71 W 10 N
Joints trending N 10 E about
100 ft. at N 29 E
Excellent for collecting



Pelecypoda

Orthonota curvata
Palaeoneilo emarginata
Cunitaria recurva
C. corrugata
Modiomorpha mytiloides
Lyncepecten orbiculatus
Modiomorpha concentrica
Orthonota undulata
Nucula bellistriata
Cypriocardella bellistriata
Orthonota parvula
Nuculites triquetus
Grammysia constricta
Soniophora carinata
S. hamiltonensis
Sphenotus cuneatus
Modiella pygmaea
Leda diversa
Pholadella radiata
Lunulicardium curtum?
Palaeoneilo muta
Actinodesma erectum
Nuculites oblongatus
Grammysia cuneata
S. arcuata
Phthorica sectifrons
Leiopteria conradi
L. dekarji
Palaeoneilo constricta
P. tenuistriata

Brachiopoda

Spirifer granulatus
Strophodontia peoplana
Tropidoleptus carinatus
S. Schuchertella chemungensis (perversa)
Spirifer pennatus
Chonetes coronatus

Georgetown-Lebanon Line - Fossil List cont'd.

Chonetes scutulus

Cyrtina hamiltonensis

Dibiculoides lodiensis var *media*

Euella hinchlaeni?

Lingula sp.

Gastropoda

Hyalithes aelis

H. striatus

Ptonatis patulus

Toxonema hamiltoniae

Synoma capellana (common)

Cyrtolites nitellus

C. pileolus

Protowartha acuticosta?

Inolobita

P. rana

C. boothi

H. deKayi

Orthoceras sp.

I. exigua

Bryozoa indet.

Crinoida

Botryocrinus obconicus (Seldring) Labelled by Miss W. H.

July 31

21

7d04

Barometer level of 1665' a few blocks of Tully to be exposed which show signs of a spring here where the water bubbles from the hillside. This is the first sure evidence of the Tully as a plume in the circulation of the water. At the level of the spring the valley is broad and nearly level and very swampy, probably being inundated by the

Proceeding in the ravine toward the head of the hill the bed of the stream seems to be checked with benches of shale chips. Higher up large flaggy slabs of sandstone which are found in place at the level of 1735' where 20 ft. of slabby sandstones are seen. These are gray in color in the sandstone slabs but contain beds of gray blue slaty shale joints.

One set N35E spaced $2\frac{1}{2}$ or 3' apart. Two

July 31.

1115

22

7d A (5, 6, 7)

Ravine barrier of outcrops
but bed contains many
chips of dark blue shale
and large sandstone slabs.
These rocks would be
identified with the Hennessy
and Chubbuck respectively

22^a

7d C7
D7

Small exposure of blue blocky
shales. Microfossils
Fossils

L. laura

M. ballustrata

L. scutellata

L. exotata

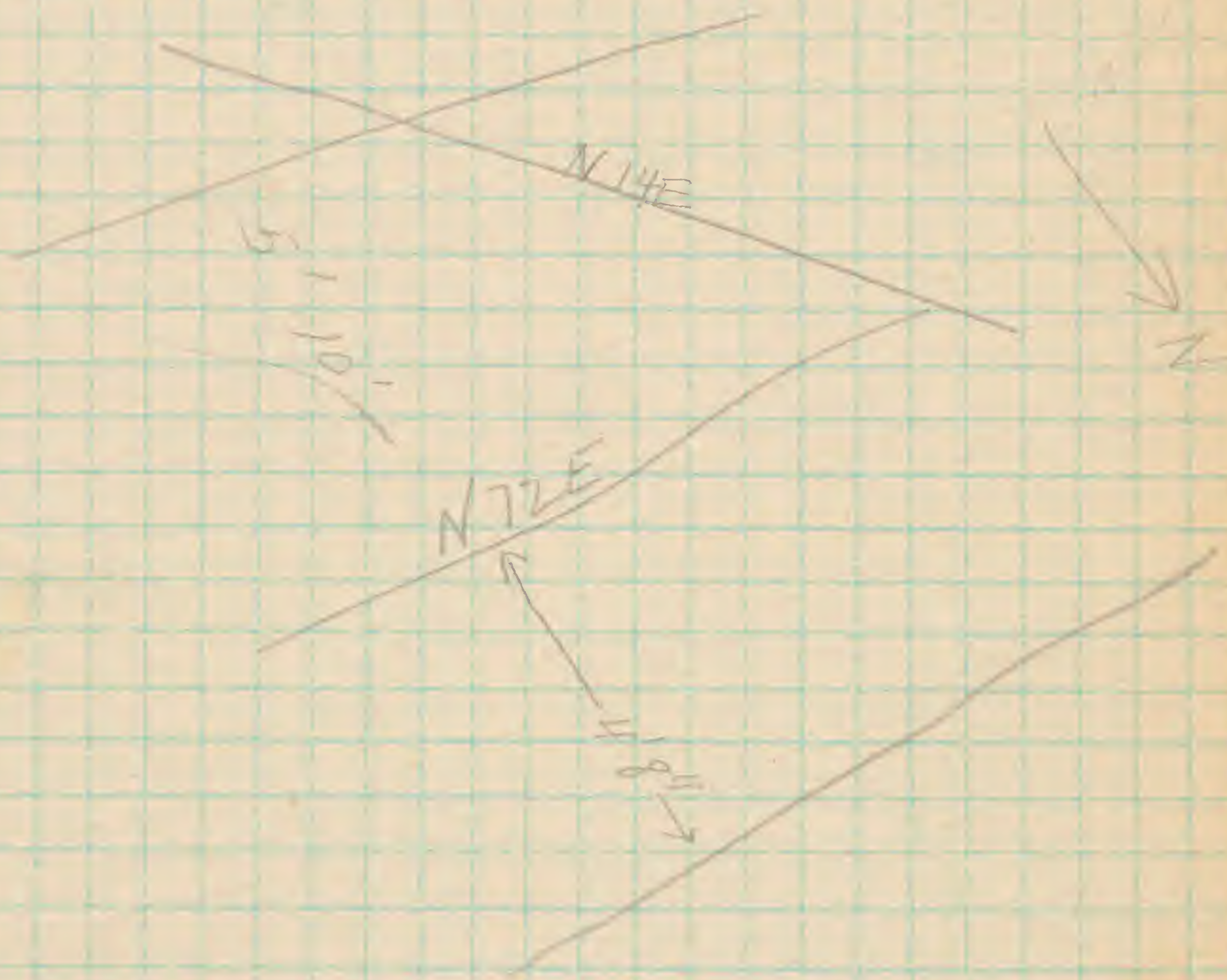
L. sinuata

C. boathu

Fossils N 72 E

N 14 E

Joints at 7dD7



23

July 31.

1116

7d D5

Level of 1750 Flat slabby sandstone and shale that weathers to thin brittle chips.

Ls at 1750 is coarse and gray and splits into thin flat slabs.

Joints at this level nearly rectangular

N 28 E

N 67 W

spaced about 3'.

5' lower down they are blue black but finely bedded.

20' lower the shales are black, mottled in places about 1720 level.

The shales continue down to 1700 in the bed of the brook

Dully ls. Barometer level of 1660

Lateral extent narrow.

Thickness about 20'

joint N 73 E

Bottom of Dully 12 steps + 2' from road level 1671'

24

August 1

1117

7CE2

Moores

3 steps above road level crumbly
blue shales of Moscow period
with abundant fossils
The exposure is 25' high. On
local patches the shale is
very friable but as a rule is
more irregular of fracture

Fauna

<i>P. radiata</i>	<i>C. brattii</i>
<i>C. bellistriata</i>	<i>T. apiana</i>
<i>R. fimbriata</i>	<i>P. cristata</i>
<i>O. hirsuta</i>	<i>N. corbularius</i>
<i>C. induta</i>	<i>C. transverse</i>
<i>R. vanuxemi</i>	<i>N. longata</i>
<i>S. punctatus</i>	<i>P. elongata</i>
<i>R. unbonata</i>	<i>P. hamiltoni</i>
<i>S. murina</i>	<i>S. granulosa</i>
<i>C. scabra</i>	
<i>P. rana</i>	
<i>Brachymeria</i>	
<i>T. caudata</i>	
<i>C. maculata</i>	

7C

at 24 1/2 steps a conspicuous
slabby ss comes into the
Hamilton.

Fully contact at 24 steps on 1678' - 83'
Fully about 24' thick
(24) 27' above base of Tully block
(249) Greenish sh.

38

7CE1

32' above base of Tully ravine
divides, one fork descending N63E
the other N40W,

Run 12 steps ^{-2'} above base of
 NWW valley a hard layer
 of sandstone about 10'
 thick comes in and the
 the black green shales
 are present.

80-100' above base of Tully
 gray ss and blue gray shale
 about 20'

24 cont'd.

ICEZ Ravine NNE Moors Glen

at 11 steps + 3' bench of hard
 ss. 10" - 12" thick
 17 steps above base of Tully
 20' of sandy blue & black
 shale and shaly ss
 At 20 steps shaly ss
 predominate but for a few
 white bands which occur
 at 24 steps these are
 are present.

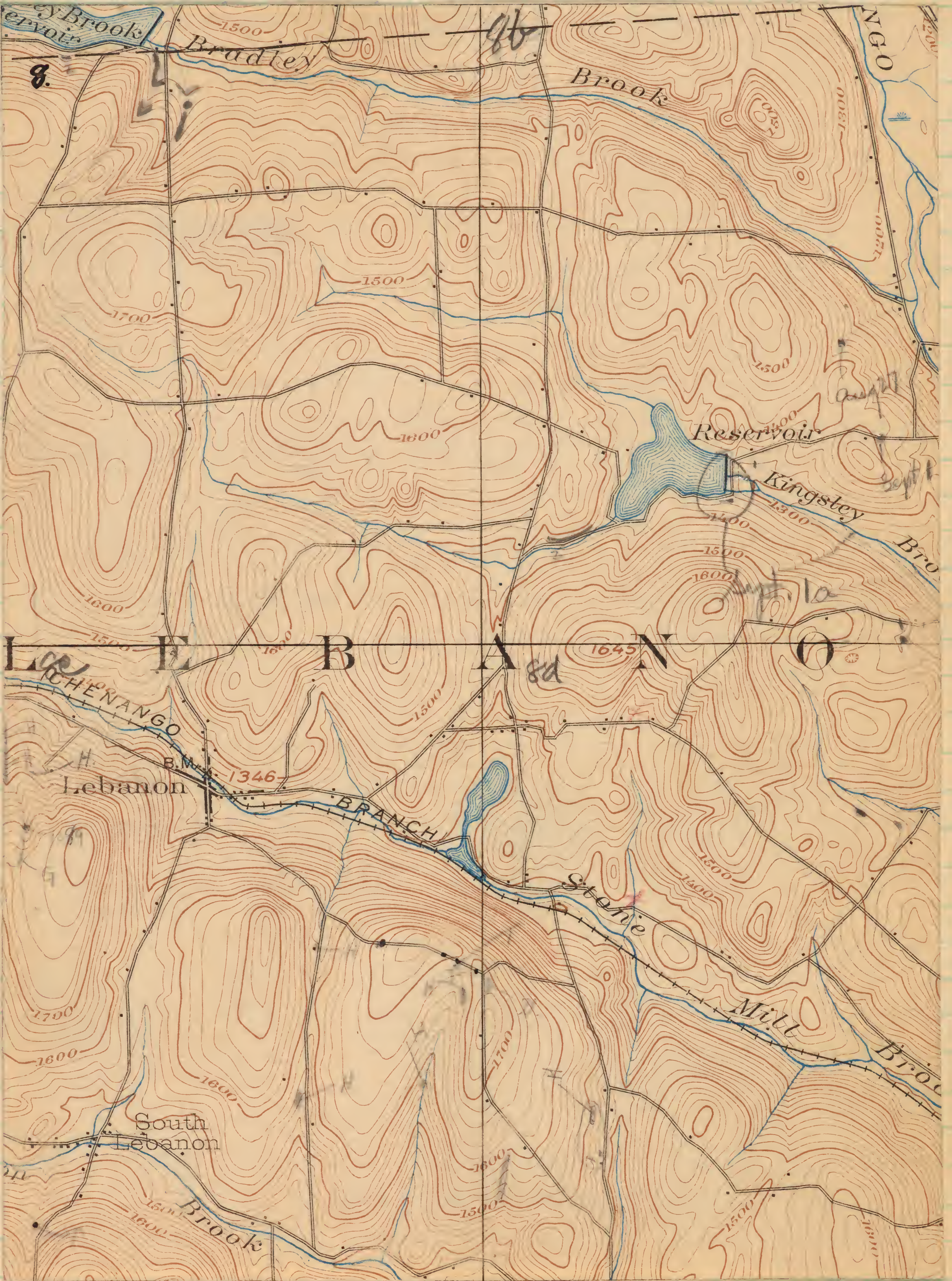
The contact of the Tully and
 Moors is not marked
 but is a transition of a
 calcareous shale dark
 in color and resistant
 to erosion.

Hard coal chert 2'
 at top of hill.

3' to be added to
 all readings above Tully

$$\begin{array}{r}
 34 \\
 \hline
 170 \\
 21 \\
 \hline
 191 \\
 1400 \\
 \hline
 167
 \end{array}$$

$$\begin{array}{r}
 100 \\
 \hline
 100
 \end{array}$$



Sept. 3

1120

Cal 213 Bradley brook reservoir

1470' sandstones in 10-15' exposure
slabby and blocky in thin, flat
layers at the top but more
compact and heavy-bedded below

S. pennata

A. erectum

T. carinatus

These fossils are like those of the
U. Quarry horizon and are
referred to that bed.

Joints N30E.

Same horizon at road leading
south from Bradley Brook
reservoir.

In ravine by first house at
1490' blue, hard shales with
some ss. below and thin
slabby ss at 1480'. Rock first
encountered at 1460'.

1510' A flat in ravine and
hard arenaceous shales with
Trematis giving up to ss. and
a hard limy band weathering
with a pitted surface and on
this more slabby sandstone.
A leached limy band at 1520'
is composed of *Spirifers* in the
main while that below is
of *Spirifers* & *Camacotrichia*.
This horizon is like that at the
top of the East ravine at
Kingley's brook.

1530 hard ss and above

to 1530 slabby sandstone

[121

1546' so.

8a D 243

1430' below houses and at their level, a thin band of the crinoidal ls. and above this blue shales to about 1460' These shales have

A. reticularis

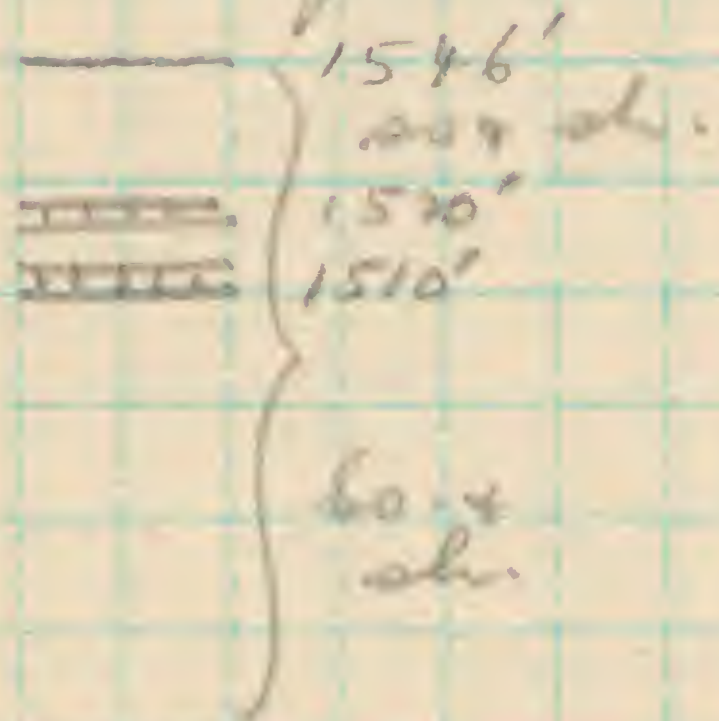
A. spiriferoides etc.

S. pennatus

This establishes the sandstones below as those of the U. Anany as it is exposed immediately behind the houses at about 1420'.

Crinoidal stone 1' thick

The flat here where the houses are is probably caused by the presence of the ls. which is covered in the first ravine.



Crinoidal 1430'

Blue sh & Earlsville

1420'

U. Anany

8a B 2

2.

1445' U. Anany ss. small exposure.

Sept. 3

1122

§ 96d7

Dark shales with *L. laura*
occurring at 1320'. These
first outcrop at 1290'. See
theses.

86 H12

1123

1417' silty sandstones 10-15
vertical breaching in slabs $3\frac{1}{4}$ "
to 1" thick. a joint system
trends N30E.

This sandstone layer must
be the same as seen at
1310' in 9 dB4. The ravine
at W.A. Martin's.

Camptocladius & *Spryella*
are common occurring as
lenses. The ss. are sub-
silty on top. *H. delavayi*

These are also exposed in
the road.
G. carinatus

11

Aug 20

East side ravine

1263' hard ss. ^{shale} for 10' almost a sandstone breaking into flat slabs.

1328' 10' of soft blue shale crumbling into small fragments see this for fauna.

1370' sandstones breaking into flat slabs. few fossils. 3' vertical.

These persist to 1424' where 5' of rock is exposed alternating shabby ss and ls lenses composed of fossils. Faint N 32 E. *T. coninatus* is common in the ls. as are *Spurifer* & *Cammarotoechia*. ss. persist above this.

28 188
5 1212
100 1372
15
1432
39
190
16
206
1280

(West ravine)

Aug 20.

1125

1255
68
1220

1320'

8' vertical of slabby sandstones.

See Thesis.

A set of joints trends

N 12 E

N 32 E

13
75
81
125
1336

1336' Blue shales immediately on the sandstones.

Fauna of the blue sh.

24
120
132
1255
1407

1385' 12' of shale and slabby sandstone alternations

1407' slabby sandstones

A slab of shell ls found at 1428 indicates that layer of ss with ls lenses to be nearby.

31

168
13
173
1255
1445

1445' layers of sandy sh. with large Spirifer & large Camarotoechia

1461' 3' bluish sandy sh.

S. pennatus

S. granulatus

T. carinatus.

37
172
13
140
1445

1445
13
1445

Aug 27.

Alt. 1170'

Westgate

1311'

1312'

1313'

1311' 6' exposure of ss.
One bent band 1" thick
maginitel of stone with
some argillaceous material.
Fossils
Long S. perrinites
Belonged to W. Quarry.

1315' in same - conglomerate
with few fossils exposed for
4'

B. sulcamarginata. May
represent upper shales of
W. Quarry.

1327' a few feet of the same

1350' arenaceous sh.
approaching ss. forming mounds
and flat in ravine. Quite
barren of fossils. This horizon
is probably that of the Red
Gate crinoidal stage.

Sept. 1.

1127

Blue shales in road
1390' elevation

T. carinatus

P. sectiformis

O. undulata

C. scutellus

L. pennatus

N. triquetra

Fossils are associated with
the shales of the West Shore
R.R. cut.

86

Sept. 7. a

30 ft. sandstone band
 - breast forming a
 fall - a small amount
 from the top.
 These are slaty and
 are like the U. Quarry
 in every respect.

A. erectum
T. carinatus
 were noted in the ss.

The upper ledge at
 1335' is composed of sandy
 blue shale.

At end of road where
 it crosses gateway of
 reservoir bluish
 crumbly shales are found
 at 1350'.

Fauna of these

N. bellistriata
N. varicosa
M. concentrica
T. carinatus
L. granulosa
C. otocchia sp.
T. marginata
Parallobolus
A. reticularis

These sands
 cannot
 belong to U. Quarry.

This correlates well with
 section at base of
 west reserve further.
 No crinoidal ls was
 seen but it may (?)
 exist. However this
 seems a bit high for
 this horizon.
 Good section for *Platystrophia*

8b² Blue shales lining road
along stream bed

T. submarginata

S. solenoides

Avicula pecten sp.

Fossils are common

G. arcuata

C. elongata

These shales are in general
fairly compact in certain
layers having more salt
than the Esplanade band.
They are like those found
above the houses in pasture
at Kingsleys brook.

14.

July 27.

1130

8d B9

Small exposure of Moscow
shale. Which contains
exposure to small blocky
fragments

Occur at levels of 1495'

Fauna profuse like
that in aspect of the
road cut at Earlville.

<i>J. carinatus</i>	<i>S. plicatus</i>
<i>M. costuliformis</i>	<i>C. bellistriata</i>
<i>P. inflatus</i>	<i>C. barthi</i>
<i>C. scitulus</i>	<i>P. radiata</i>
<i>P. cylindrica</i>	<i>M. bellistriata</i>
<i>P. kana</i>	<i>S. pinnatus</i>
<i>C. umbonata</i>	<i>M. ardis</i>
<i>C. mucronatus</i>	<i>P. tenuis</i> ?
<i>P. wagneri</i>	<i>C. setigerus</i>
<i>M. varicosa</i>	

These shales are found along
the road and in small
ravines for some 200 yds.

July 27

14a
8d All

Exposures of Moscow, coarse sh.
with *P. kana*

No Trilobites was observed on tops
of hills E of this station

15

July 27

1131

8C cl7

20' of Hennessy shales
exposed at the level of 1705-
1725

They are black, friable and
soft. Only about $\frac{1}{2}$ ' of soil
rests on the rock at this
place. Some of the shale
chips are a deep red-brown
from rust. The largest
exposure is 1' thick and
about 20' long. In the
road gullies these are
also exposed.

at road intersection 1705' to
E. gully not because it
covered by (tilt).

July 27.

15a
8C H9Small exposure of blue M shale
fanga

<i>S. pinnatus</i>	<i>N. oblongatus</i>
<i>P. rana</i> cc	<i>N. corbuliformis</i>
<i>M. mytiloides</i>	<i>S. cotatum</i>
<i>S. granulosa</i>	<i>P. fecunda</i>
<i>R. limbiata</i>	<i>S. submarginata</i>
<i>C. muscoratus</i>	<i>Leiopteria</i> sp.
<i>S. aggera</i>	<i>P. emarginata</i>
<i>C. scintilla</i>	<i>G. subornata</i>
<i>M. halli</i>	<i>M. pyramidalis</i>

16

*R. utahensis**Orthoceras* sp.*Y. cristata**O. cristatus**C. mucronatus**M. mucronatus**C. cristata**P. fragilis*

8C d 7 (SD)

A 3 ft. exposure of shales with abundant *Leiodontolites**Spinifer. pinnatus*Flat spined *Nautiloid**Athyris* cf. *spiniferoides* *L. mucronatus**S. hemisphaerica* *C. cristatus**S. ardaiflora* *L. cristatus**S. globosa* *Taormina**H. acilis**Palaeonitida* sp.*P. pinnata**C. cristatus**C. bellulata*

The shales are quite arenaceous

Discussion: - 40' above 8C d 7 () occurs the shale (unfossiliferous) referred provisionally to the Genesee. At 1680' the rock may be followed in road gullies. At 1710' the shales are black and fissile as at the larger exposure 10' above.

At 1705' hard blue ls. is found in the road gully just over the bend and intersection of the road. The limestone is thin bedded alternating with calcareous shales. The shales ~~blend~~ blend with the black ones above by a gradual transition. Small corals were

Located in the line about
the blocky and fragmental
appearance of the ls. makes
it difficult to determine
whether it is road metal or
Tully in place. However,
its position between the
"massive" and Hamilton, and
truth and accuracy to its
position. The upper limit of
the Tully would be placed
here at 1707'.

at the level of 1695' Thin layers of
hard ls.

At 1695' the rock is a soft
sandy shale.

Note:- The Tully here can be
hardly more than 10' thick
as a limestone, probably
representing a finger of
limestone in the fractur
shale horizon noted by
Prosser.

Very next up rise at 1690'
Leached shale with ls. blue
like the Tully.

17.

8C57 :- Same sequence as 8C57.

17a

8CF 9.

Coarse Hamilton shales.
S. parvatus
T. carinatus
C. scintilla
R. warrineri

July 27.

8C AII

18.

1560' in 20' of Monocent-
shales, blue & irregular fracture

at 1575' joint read

N7E

N69E

at 1594' The calcareous
band in the Monocent was
noted. Its weathering is
not unlike that of the
Tully.

joints a foot below read

N31E 90° and N78W

joints 20' below Tully

N11E and N78E

Tully at 1615 by hand level
barometer reads 1530'. Small
corals are common in the
top band. There is considerable
calcareous shale in the
limestone, the increase in
argillaceous matter probably
accounts for the thickening
of the bed.

Tully measures 23' 8"

Benessee cuts up 11' above
the Tully and continues
intermittently up the
ravine.

19

July 30

8CA4

Tully outcrops at 1689'

A small horizontal exposure, but 4 steps or 21 ft. of Tully in a small gully. Black-blue ls. with abundant small corals 5' from the top. The surface is pitted from uneven solution weathering. The weathered surface is a grey enriched by a light brown. The layers are heavily bedded, the largest single layer being 2 1/2' thick. Layers of ls. alternate with hard, brittle, calcareous shales.

Fossils are not abundant in the ls.

The actual Monks - Tully contact is not observed nor is the actual Genesee contact.

60' from base of Tully 12' of fissile, black sh. alternating with bands of coarse ss. in a little cascade. The ss.

At level of 1675' Monks shale soft, blue, red brown rust, crumbling 10' high by 25' horizontal

S. permatus

L. laura cc.

P. conjugata

T. casimatus

C. beudanticus

R. communis

P. petulus
M. bellistriata

at 1645' arenaceous Moscovian
 shales.

P. petulus
M. pygmaea

Ilino ravine is excellent for
 the Moscovian, nearly 300'

Barometer measures 2650 at
 bottom of Tully.

Aug 5.

Red Gate :-

9d H7
c

First stone encountered at 1160' and consists of 2' of coarse grey ss. splitting into flat slabs. This stone is also that found in upper layers of the U. Quarry. This stone continues up another step to 1165' 5"

1168' Stone is sandy but is becoming irregular in fracture. It is also darker and is losing its mass of fracture as the clay becomes more abundant. In this transition layer *P. lineata* and a small *Camarotoechia* were noted.

1170' 10' Blocky, blue, sandy shales with a calcareous blue band at 1169' are noted. These are very fossiliferous (see thesis).

They have one set of joints spaced widely apart, trending N 33 E 79 S.

The blue fossiliferous shales continue to 1190' where they merge into a ls composed largely of ovoid *Trematis*. This limestone is 2' thick. See fauna in thesis.

On this limestone at the elevation of 1192 1/2' comes a soft blue shale with

abundant fossils, many of new
kinds. The transition is abrupt
lithologically as the shales
immediately on the limestone
have many crinoid remains
and small flowers of ls. The ls.
on the other hand has pockets
of shale and many corals at
the top.

1139

Topographically this limestone
hump falls by virtue of
its hardness.

at 1202' a band of ss comes
into the shale, it is 6 or 7"
thick and is dark and coarse
in comparison to the sh.
below. 2 1/2 to 3' above this band
is another of the same kind

5' above the second band is
another 1' thick

1219' blue blocky shales.

1252' 5" falls (uprooted) tree has
turned red with its
roots showing blue shales.
irregular of fracture and having
a purple weathering luster.

Fossils at 1252'

N. triguter (large like Eastville)
Camptotrochis sp.

O. parvula

O. cuneata

C. scitulus

C. mucronatus occurs in beds of

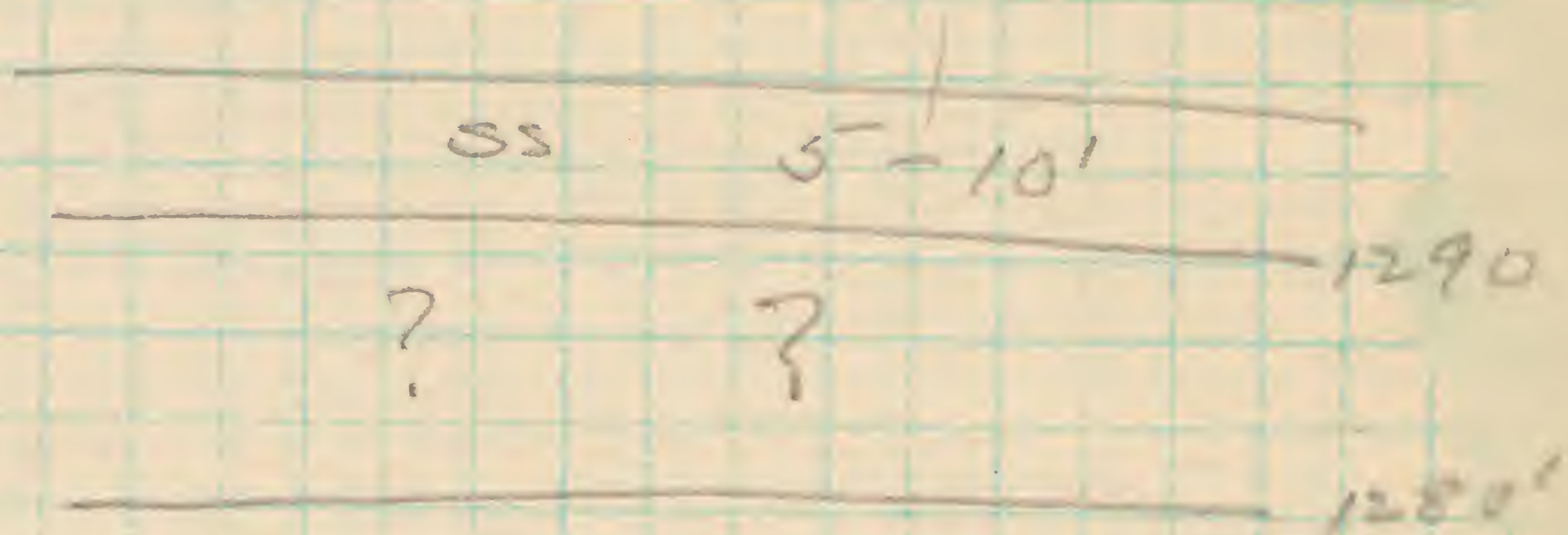
B. crinitaria

B. globosa

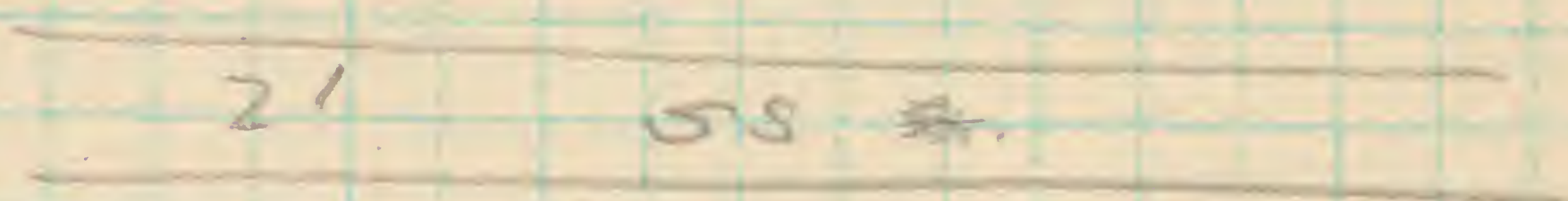
Note: These fossils
are like Eastville but

purplish (weathered shale)

interbedded with thin
ss beds.



Blue sh.



Blue sh



$$\begin{array}{r} 1295 \\ 1192 \\ \hline 103 \end{array}$$

$$\begin{array}{r} 1267 \\ 1192 \\ \hline 75 \end{array}$$

Exposures continue to 1280' where the valley widens. At about 1260' 30' for rocks are exposed, having a hard ss band of $1\frac{1}{2}$ ' to 2' thickness in it. This band forms a cascade in the brook where the water crosses it.

At 1280' the shales are sandy and hard, grey blue in color. They are not very fossiliferous.

1290' grey sandy stone in flat slabs tending to split in layers according to the following joint pattern: N30E and N60W making small rectangular blocks.

These ss continue up for 5' more becoming coarser and splitting into flatter slabs. They are much like much of the quarry rock in texture. Joints N30E & N60W.

These sandstone layers are interrupted by the cascade of the flattening of the hill above 1300' where the stream is gentle and the slopes are low.

Aug 5.

1141

9d H5

at 1195' 30 yds horizontally
and 4025' vertical of sd. like those
in U. Quarry. Probably the
same ones. Sandy concretions
are noted also.

Joint

N29E 90° and N57W with an
irregular parting at various angles.

Typical Quarry fossils

S. pennatus (very transverse) abundant &
C. coronatus var. *cyrtolus*

Aug 5

Middleport

9d E1

Directly across road, east of
Mr. C. A. Oakes residence 1120' are
8' of arenaceous shales that crumble
readily into small fragments. These
resemble the kind below the Quarry
on the golf links & those at the
bottom in Randolphville Gorge. This
bed is not very fossiliferous.

9d F1

1272' Coarse, thin-bedded sand-
stones referred to the U. Quarry
horizon. They are interbedded & exposed
about 8' vertical. The fossils of
this rock give it the appearance
of the stone below the crinoidals
at Red Gate or the top of the U.
Quarry.

1142

Exposure at 22 m whose face
is a smooth quarry wall
showing large concretions
pockets is below the level
of the sandy shale at 1272.
The base of this quarry is at
1260' and consists of blabby
ss. as found in the U. Quarry.
The quarry wall is a joint
face trending N30 E

Aug. 5 Patterson's

21-22 l. —

1170' grey sandy shale

96^(F)
G } 12

at 1186 these shales are
capped by heavier stone
that does not so readily
crumble on exposure.

In the shales at 1185'
Pterygids and *L. laura*
are common
A. umbonata
C. indenta

These shales are exposed
at Randallville gorge.

The hard layer is quite
sandy.

At 17 steps above 1110' consid-
erable compact layers
of ss have come in
between the shales
and these form
cascades in the brook

at 1205' ss are
beginning to

predominate and are the
coarse slabby kind
breaking into rectangles

27, 203' a 30' cascade
shows the sequence of
alternating green crumbly
sandy shales with slabby
ss. The ss layers are
rarely more than a
foot thick at the most.

235' sandy shale and
ss slabs.

1251' some sandy shale
which gives way in a
foot to slabby ss. which
are now predominant in
a 25' cascade. This second
falls consists of U. Quarry
rock.

S. perrinites of the *beaumontensis*
kind is found at 1267' also
C. crumhornatus

P. flabellum *P. carinatus*
C. boethi

all having the appearance
of the fossils at the quarry.
Slight ripple marking
on the ss is noted.

1289' The stone is more
massive, less well jointed
and breaks into more
irregular slabs like the
sands which carry
abundant shale. They
are probably like the blue
shales below the crinoidal
stone at Red Gate.

At 1285' in the base of the
3rd cascade member of
round concretions were
noted like those in the
upper layers of the U. Gray

Fauna of sandy shale at
1289'

P. flabellum ce.
S. hamiltonensis c.
S. montum
B. sulcomarginata
P. emarginata
Taonurus (spiral)
Large Spirifer
A. Peractum
D. carinatus
Lyniopecten macrodonta
S. granulosa
C. conugata
C. tenuiseta
C. hamiltoniae
R. grandis
C. complanata
This list establishes this
horizon from 1289' to
1300' as the Peleeypod
horizon in Red Gate.

178
16
193

1300' bank of falls in stream
bottom large square blocks
of a hard quite pure limestone
found which correspond in
stratigraphic position and
character to the crinoidal
limestone at Red Gate. It
is about 1' thick and forms
the bank of the falls. Near
the stream flattens out in

a valley of small grade.

1145

1305' dark blue shales
the same as those on
crinoidal stone at Reel
Lake are noted the fauna
here is marked in difference
from that below. See lists

These blue shales with
sandstone layers are found
above 1305' dipping
vertically about 30°

Aug. 5.

1146

19 R - 19 J

96 ^H J) 10

1250' small cascades of grey blocky ss which split into rectangular blocks of small dimension

1261 small beds of dark sh.

1267' dark sh & blocky ss

1304 ss becoming prominent joints in ss

N 32 1/2 E

N 64 W

1315' cascades thin U. Quarry ss. which is ripple marked on some of the larger slabs. The stone breaks into thin plates

at 1347' the blue slates below the crinoidal are found

1363' The valley widens near the top of the hill

A thin slab ^(3") of ls. (Crinoid) was located at 1365'. This stone is without doubt the cause of the flattening of the valley.

This slab of ls. contained a small head of Favosites and D. sulphurea

1120
270
18
1348

Aug 6.

1147

21i
9a A12

15-70' 25' hor 10' vertical of
blue shale with purple brown
weathering

Joints N 52 W and N 30 E

Fossils

S. pennatus

M. subalata

J. carinatus

Transverse

J. submarginata

Leptasteria sp.

N. trigonatus ?

C. coronatus (small)

H. dekeyi (small)

These have the appearance of
Moscow shales.

Texturally the shales are like
those at Earlville.

Aug 6

23k
9d H $\frac{22}{3}$

1480' sandy sh. of Moscow
see thesis

Aug 6.

9d B7

298-h

1193' a hard sandy layer

in stream bed at entrance to

gorge. The beds of hard ss.

alternate with hard blue

shales. I. granulosa noted

at 1174'. When exposed the

massive beds form the

escarpment in the stream.

I casts of A. bryoz were noted

I. granulosa common

A. spinifrons I. cuneata

A. dichroata A. unbonata

C. setulosus I. submarginata

Aviculigenton sp. P. fensholt

I. cuneata

The shales are very hard

and irregularly fractured

C. truncatula (Carter)

P. vestitus C. boottii

O. cuneata

I have shales exposed

for 30' vertically and

are also traced at

Earlville

Rock is seen up to 1260'

Aug 6

1149

G 9d.
9d D $\frac{7}{8}$

Coarse shale grey from
sunbaking. Has provided
many boulders in the field
which afford good collecting
These shales are correlated
by fauna with those
below the conoidal ls at
Red Gate.

New Hym 1120'

Aug. 9.

1150

9a 52.

1491' Blue sandy shales - no fossils
Rock splits with uneven
fracture. *Proconus* common

1498' dark shales with fossils
shale like those below.

L. laura cc.

O. media ?

H. dehayi (complete)

Orthoceras sp.

P. discordium ?

1501' shales are more arenaceous

1506' 8" layer of ss hard &
compact forming a cascade
Joints in this layer trend
N 26 E

1511' stone is more arenaceous
and fossils are rare.

1522' same

1527. blue arenaceous and very
hard alternating with
bands of more argillaceous
sh.

Joints at 1529' N 23 E + N 53 W

1544 They break into large flat
irregular slabs no fossils noted

1549 rock of same kind

Joint N 35 E

1554 hard slabby ss. & here the
valley widens

9a B6

Sept. 6.

1151

On Golf-links 16 steps above
Chem Lab. bluish sandy shales
mentioned in Prosser's reports
Exposure 7' vertical. See thesis for
fauna and description.

New Hym between 1120-1140.

Aug 19.

Earlville

Granoidal stone at 1130'
Joint in ls. N 53 W.

Sept 1.

96B1

Bed of slabby ss. referred to 8Qa.
Thinner.
1280'.

Joint planes trend

N 38 E 90°

N 34 E 90°

N 33 E 90°.

The formation is about 4' thick
the bottom 2' being coarse shale
the top two being slabby ss. which
has the appearance of that
found in the U. Quarry.

6dC12

Shales referred to New Hope
horizon top at 1215'.
See thesis.

Joint N 36 E

A cast of *A. reticularis* was
moved in uppermost bed.

Sept. 6.

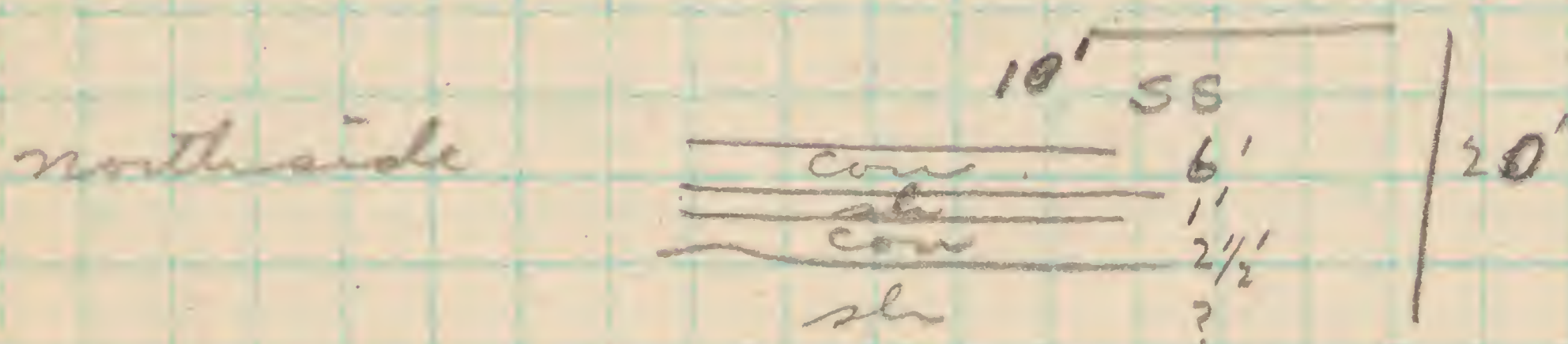
1152

9a B6'

U. Quarry

Floor at 1428'

Floor shows dark slaty shales often well ripple-marked. Then alternate shales of the same kind with ss. The shale beds are not continuous but lenslike. On this a bed of concretions, localized in east wall end extending along south wall for about 50 yds. On north side this bed consists of two parts separated by slaty shale.



over
Some of the lower beds are of ss but the parting planes are coated by black sh. The only fossils known from these black shales are
P. fragilis
O. undulata

Greatest height of quarry 42'

1457' concretions and fossils are numerous in the ss.

- L. macaodontes*
- A. erectum*
- S. hamiltonensis*
- C. coronatus apicalis*
- B. alveata*

Some of the ss is locally a sh. conglomerate.

The exposure is over
100 yds in length and about
20' vertical at its highest.

1310 in the road there are
concretions and break in heavier
slabs.

Joints at about 1320.

N40E $96\frac{1}{2}^{\circ}$ NE

Aug 9.

1153

Payne St. Ravine

9a B7,
CS1

Behind Payne residence
at second house 1160'
18' above 1160' sh. sh irregular
of fracture and weathering into
heavy pieces exposed for 110'
vertically.

C. suturus

C. setigerus

A short distance upstream a
quarry wall is revealed of
pieces of heavy sh. The bottom
of the quarry is at 1182'. It
reveals the joint faces of
one set but other jointing
is obscure. The prominent set
trends N45E 93°N

1181' hand exposure (true) the
have come in composed
nearly completely of fossils.
These have been phyllocladized
in the increasing hardness
and increased lamination of
the various layers from
1207 up. The ls become as lime
lenses.

The falls at 1200' consists
of a bed of this hard ls. in
which beds of Favosites
were noted.

Comarotoechia & large &
small Spirifer make up
the bulk of the ls.

From the true argillaceous
shells to the lime bed is
an interval of between

Spring St. Payne
intersects top
of 1200' to 1210'
in ravine at
intersection

TC

Fossils are most numerous in the upper part of the quarry.

Joints N32 E 90°

N33 E nearly 90°

Some locally dips a few degrees more than 90° .

1210' shales of 1st (Eaton formation)
 1222' large exposure of these
 shales which have become
 coarser and are those found
 at the new Syn.

Payne St

14' of shales are exposed above
 1222'.

At 1230' a cascade has formed
 because of a slightly harder
 layer which is probably
 somewhat calcareous.

At 1260 a second fall is
 formed of hard bandy
 layers which terminate
 the New Syn + Eaton
 horizons.

At 1270 the new syn
 calcareous band with its
 numerous fossils is
 noted

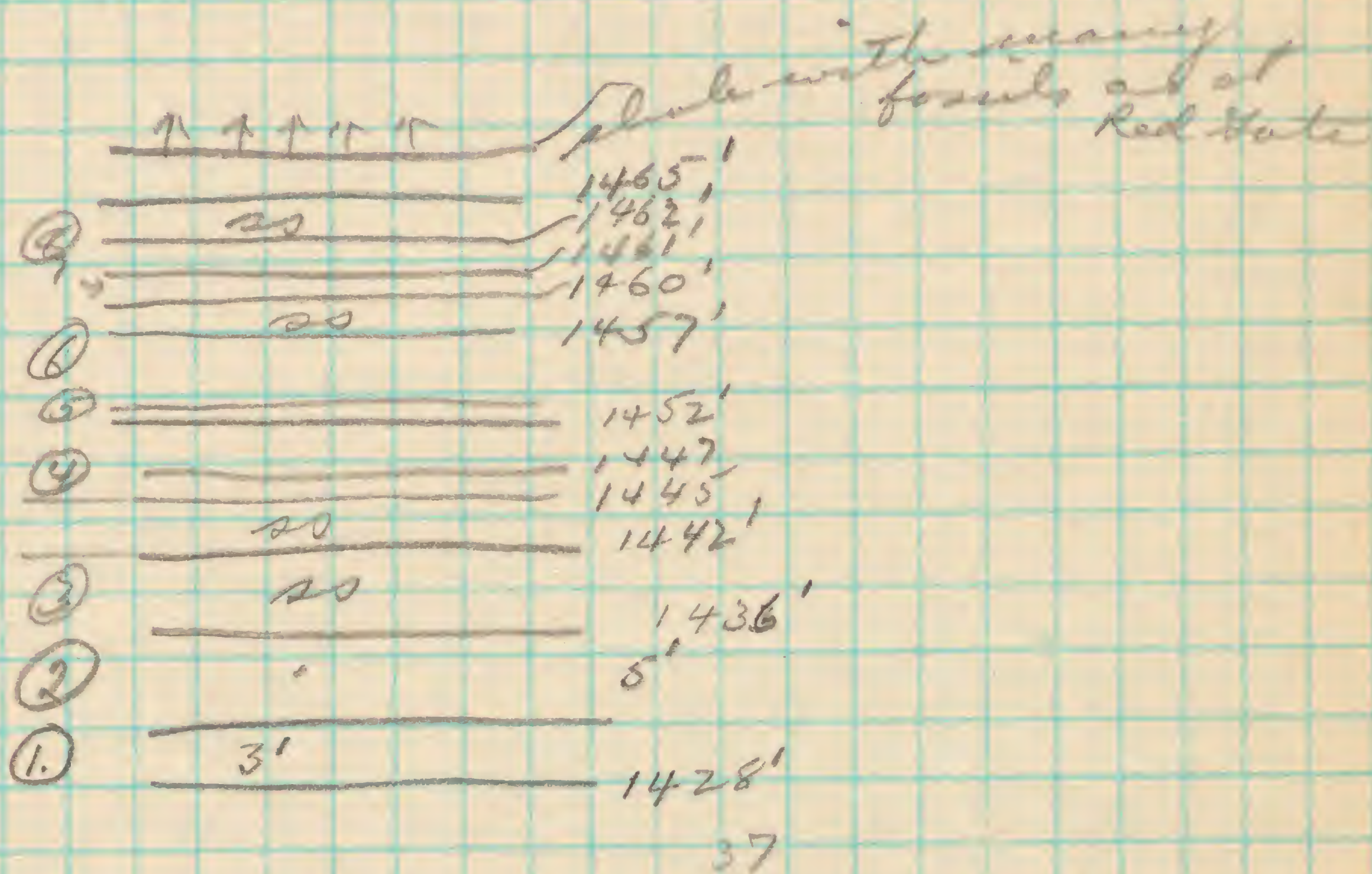
S. purpurea (very large)
M. concentrica
Spirifer
A. princeps

It has joints spaced
 only 9" to 1 foot, the seam
 set trending N39E

This hard band is
 characterized by large
 Pelecypods + *Spirifers*.

1275' dark shales
 crumbling into small
 fragments. fossils not
 abundant. These shales
 are found above the new
 syn horizon at Dart
 Hill.

Section in the quarry on Swall
15 yds west of end of concretion bed



- ⑧ ss and dark sh.
- ⑦ 1/2' limy band with *S. perplana*
- ⑥ Thin-bedded ss. with concretions (round).
- ⑤ Remnants of black sh. 2" at most
- ④ Thin-bedded ss.
- ③ Next six ft show disappearance of black sh. heavily bedded ss.
- ② Next five feet shows the same but ss layers are thicker
- ① ss. with black shale beds and coatings on bedding planes.

Aug 20

1155

9d B4

Ravine at W. A. Martin's
Road and stream intersect at
at 1125'

1175' 8' of alternations, slabby
sandstone and soft blue clays.

1186' 15-20' vertical of slabby
ss in thin and thick
beds representing the U. Quarry

Joints:- N26E

Some joints at 1197' measure
N34E This set has determined
the course of the brook
which has lifted blocks to
form a fairly deep channel.
A secondary set sometimes
formed N57W. Typical U. Quarry
fossils and sands are
noted in a small quarry
at 1197'

1206' Exposure of thick 2'
bed of hard ss. above which
rests 4' thin bedded ss
exposed as a joint plane
and this shows large
pockets where concretions
formerly rested. Joints
here are distinctly spaced
about 15'

Trend N34E 90°

N34E 90°

In slabs about typical
Quarry fossils. Here such
trend and for 10' above
is the kind quarried at
Hamilton.

1223' sand loses massive character concretions small ball-like, joints uneven, closely spaced 15" - 12"
 grain set: — N35E,
 Secondary — too poorly defined

1226

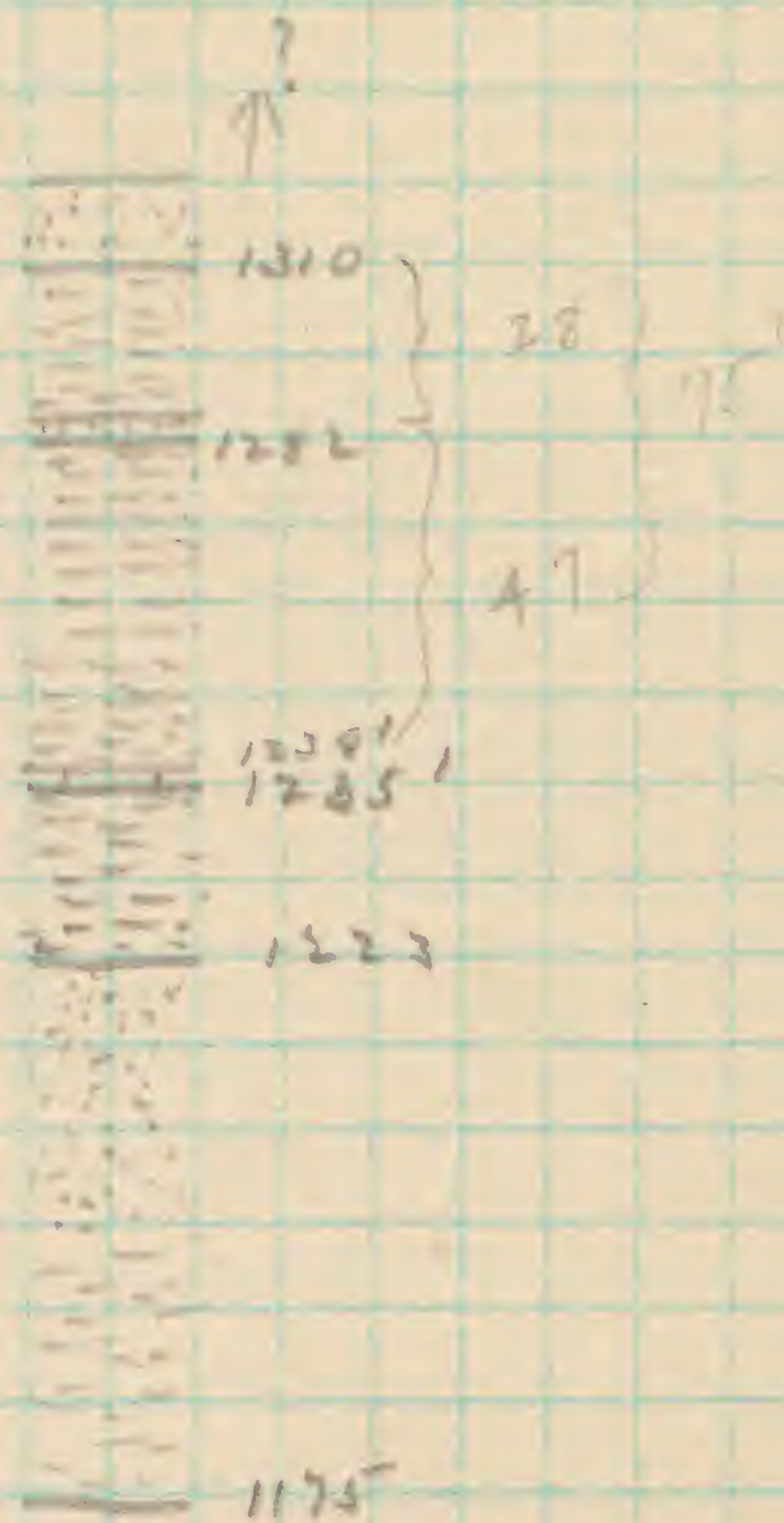
1126 blue-grey sandy sh.
 in which *Ornatolithus* are common. The grade of the stream is here less as the floor flattens suggesting approach of the Crinoidal bed

1235' hard impure limestone referred to that at Red Gate only 9" to a foot exposed. This rock is the cause of the flat at this point. The stone shows a pitted weathering which is found only in the limestones. A block of this ls. noted in the stream bed was exactly 1' in thickness.

1238' blue shales of the same kind as at Earlville.
 joints N57W closely spaced.
 Fossils noted

P. discolor

1282' a sandy band is succeeded by soft, slaty shales breaking into flat chips.



Aug 5.

1157

16 l
9 b cl 6
9 a A 2 6
B 3 6

Ravine at Dunstons.

1147' 4' vertical of bleached
crumbly arenaceous shales.
These are at the New Hym
horizon.

1190 cascade in hard sandy
rock. Probably top of new Hym

1196 soft blue fissile (?) shales
breaking into very thin flat
chips. This rock is found at
Eaton on the top of the hill 10'

1253' falls formed by a hard
layer which caps these black
shales. The black soft shales
are 60-65' thick.

The layer forming the falls
is 2' thick of calcareous ss.
of very irregular fracture
On this rest arenaceous
shales but near the heavy
calcareous band a 2" layer
of hard pure ls. The shale
on the line band continue
quite fissile for about
7 or 8 ft. f. but soon
become heavier bedded.

In the calcareous band (2")
L. pinnatus etc.

L. larva

A. umbonata

These are the shales
exposed at Randallville
Gorge at the base

1303

1158

1203' (40' above fall.)
 excellent exposures of
 15' vertical of dark sh
 with irregular fracture
 Fossils and source.

These shales become
 lost at 1250'. in a
 hard layer. and 10'
 above that are thin ss.
 moderately coarse in
 texture

at 1383' a small exposure of
 grey coarse shales.

1443 grey slaty sand.

1454' an exposure of 50 yds
 horizontal 10' vertical of
 grey ss. splitting into flat
 slabs. Represents top sandy
 layers of Quarry (University)
 Joint N 34 E

9d AZ

Aug 20.

1159

ss. and shale of U. Quarry.
Thin and slabby. Typical
U. Quarry fossils. Close to the
level of the Middle Fork
exposures. About 1230'

About 100' above these are
blue shale (see thesis) Distance
estimated.

6d B2

Aug 20. 1160
Kingsley brook.

Along road

1171'

1187'

Sandy shales with *L. laura*
Thin lobbey, grey ss.
splitting in layers $\frac{1}{2}$ " thick
3rd vertical

1220'

1st house

1225-1241

U. Quarry rock.

1265'

A foot of hard limestone.

1266'

Blue shale with abundant
*Brachiozoods**A. reticularis**R. Vanuxemi**S. perplana**C. complanata**Parallelodon hamiltoniae**A. decussata**S. pennatus**P. rana**C. boothii**A. spiniferoides**I. cornutus**C. hamiltoniae**P. patulus*

U. Quarry rock surrounds the
feeder ^{reservoir} for the canal at 1220'.
Quarry stone is found up to level
of 1265' where the limestone is
met. Below reservoir are
alternations of ss + dark sh
to end of gulches where the shale
has red ss. bands.

9d A1

1308'

N54W of 2nd house. hard
blue shales belonging to Eastville
horizon. Represents a local hardening

62,000
About half of the Hawaiian Islands
the resulting maps are published

The features shown on these maps are
groups—(1) water, including seas,
and other bodies of water; (2)
hills, valleys, and other features of
(works of man), such as towns,



City or
village

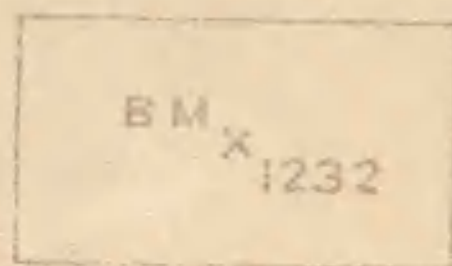


Roads and
buildings

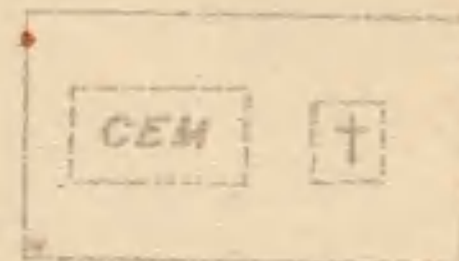


Dam

Dam with lock



Bench mark



Cemeteries

(Temporary bench mark shown
by brown cross and black
figures without lettering)



1 2 3 4 5

Stone Mill about
1335' - blocks loose
+ some in place
in sandy outlet
about 1 ad more on
E. side of the river

5.4
51

110

1161

May 17

Fully SW of Smyrna

Vitulina present 1 1/2' below base of Tully.

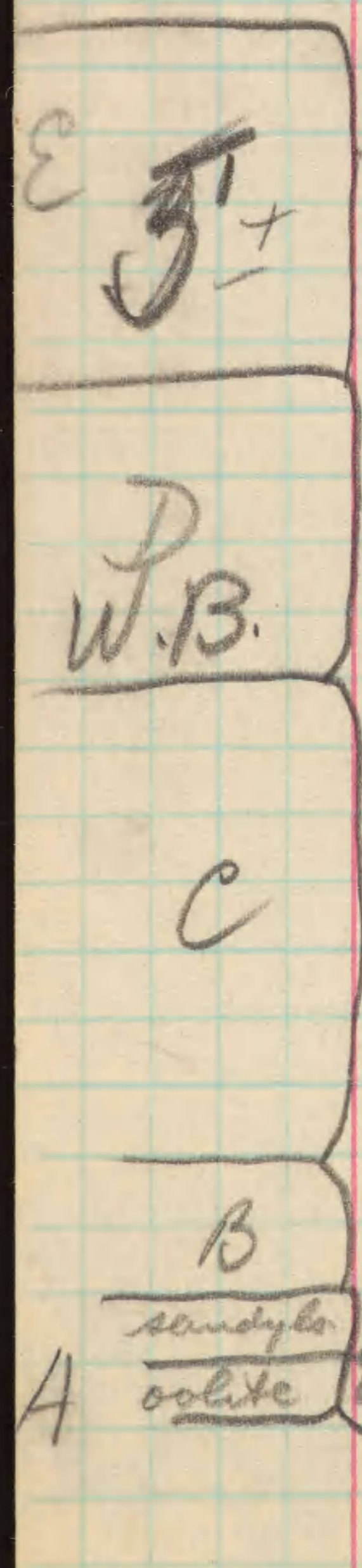
A. Basal bed - about 4" oolitic limestone passing into gray sand limestone with corals 74".

B. Shaly ls with

C Shaly ls. with corals (Lopholasma)

D - 2-3' of shaly and hard ls. with fossils

E. Mostly shaly ss with a thin layer of small corals at top.



2-3'

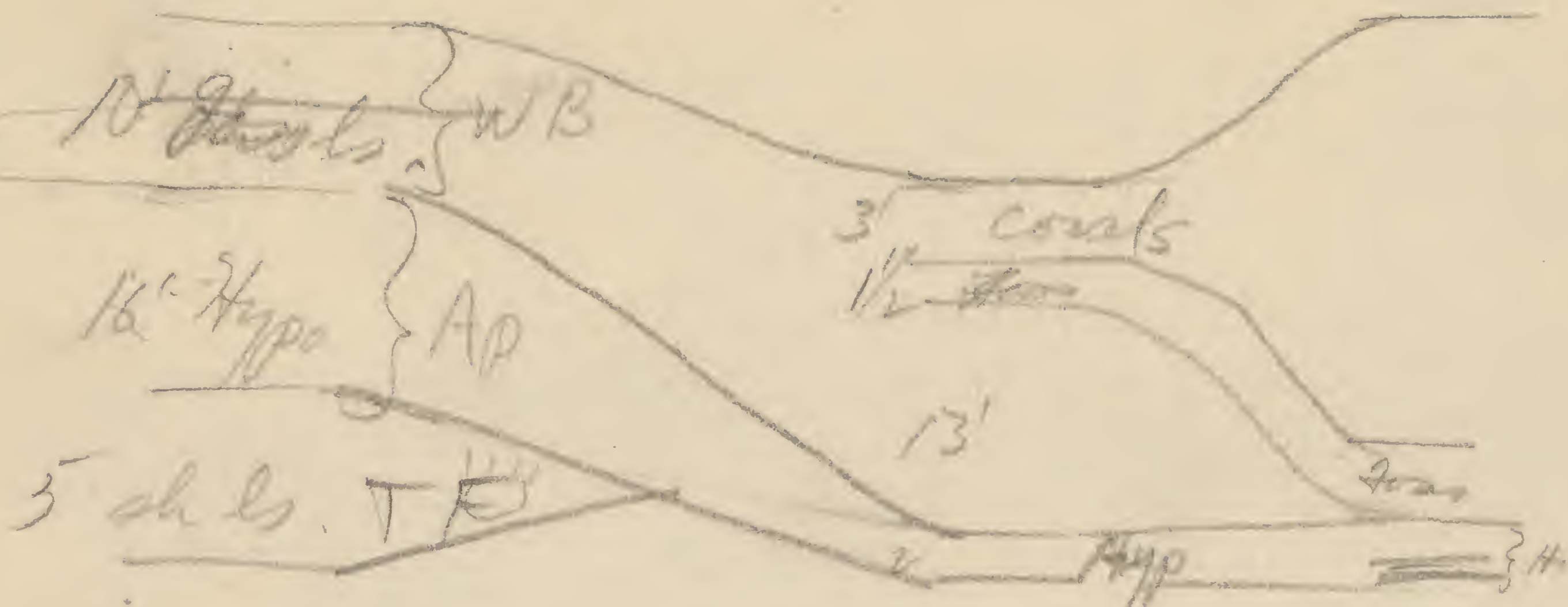
9 1/2'

1'

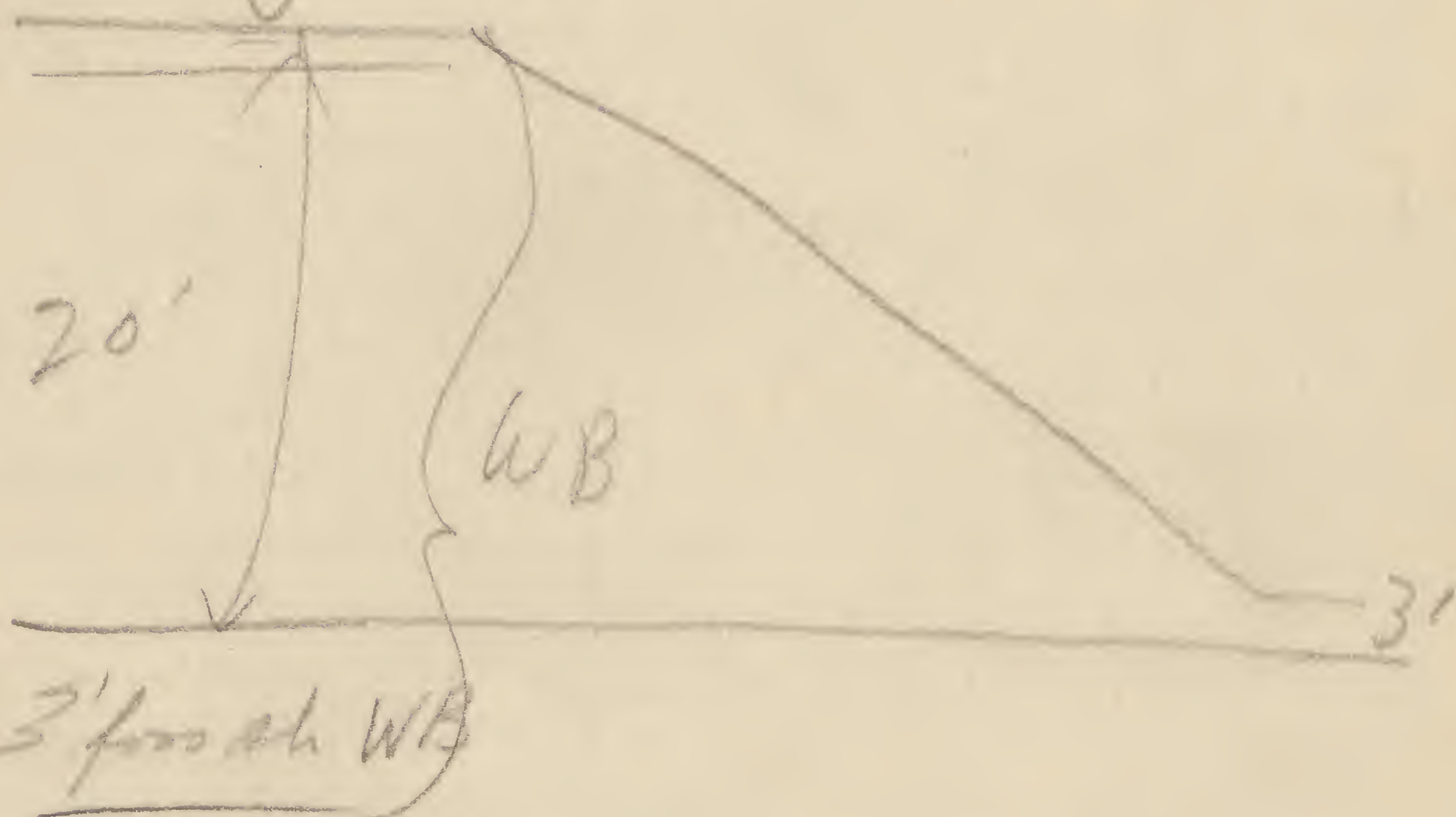
8 1/2'

A.P.Z.

Top is about 1345', bottom about 1325'



Paracyclas liata



Ap. { 2' ss ls.
C.A.
Hyp. Hyp. 4"

1162

July 4 collecting - all day

July 15-96. Werners

5'5" Lowest layer of massive blue ls. contains *S. tulliensis* & *H. cuboides*. This layer is 1-1/2' thick. This lowest stone has a granular appearance. Above it becomes bluer and even grained.

10'10" - 7 ft. a 4" band of hard blue ls. but above the stone & breaks into flat, brittle slabs, but at 10" again the heavy blue stone is in evidence.

15'15" - at 14' there is a band of shale which is argillaceous and ^{about} nearly a ft thick with many bryozoa small corals & brachiopods, also crinoid stems. Above & below are heavy ls bands, the upper one containing coiled cephalopods.

+ 2' hard blue ls., thin Genesee contact.

Total thickness $15' + 1' + 2' + 3'' = 18'3''$

Moscow is exposed from 1480 - up to about 1510 or 20'

Sept. 3.

1163

Princetonville 1280' Along creek and forming a cascade in brook blue to blue-grey shales with few fossils.

Ganna

G. corbuliformis

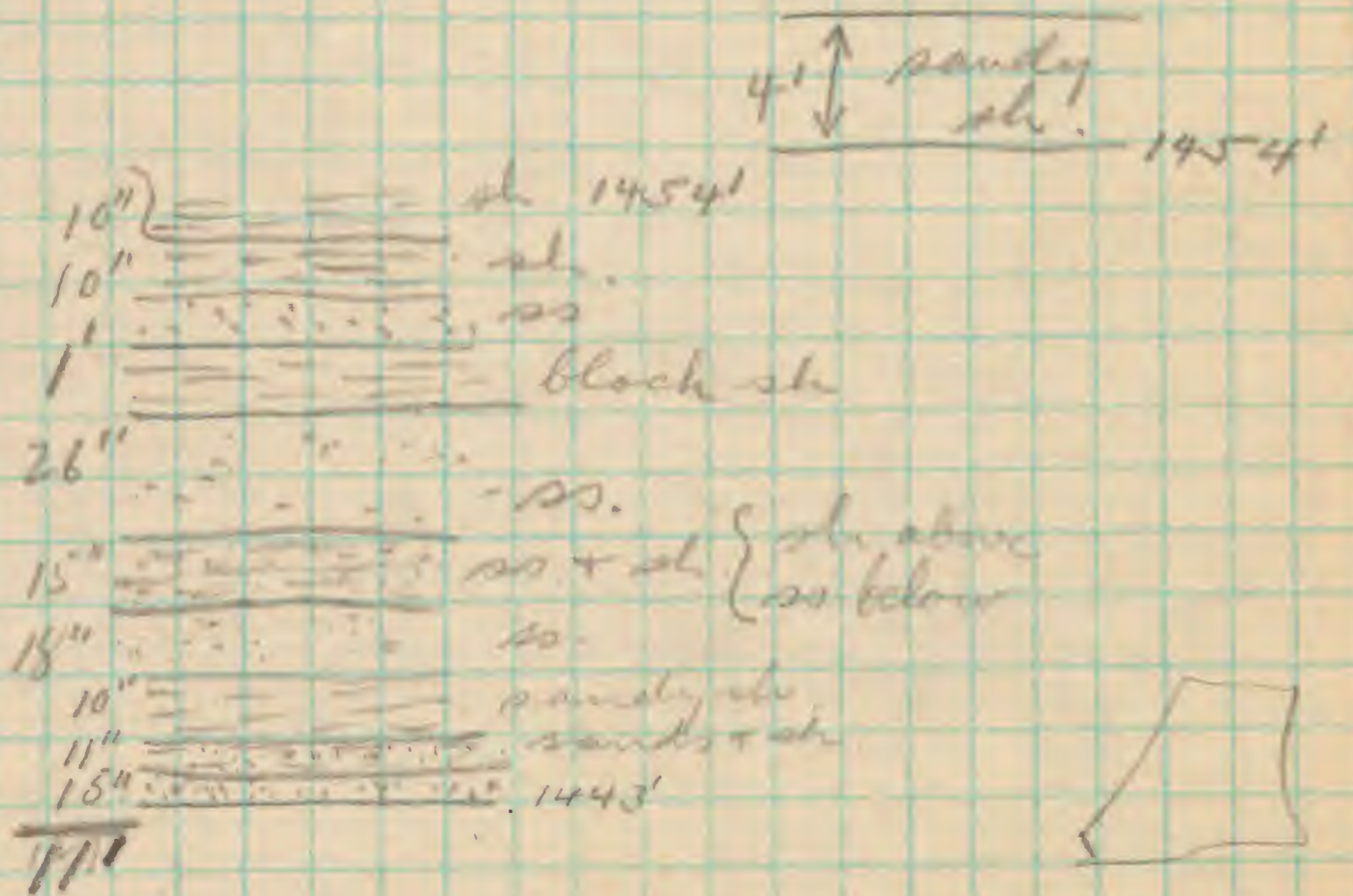
P. costata

These are 12' thick here.

1443' vertical S54W from road intersection and above lower shales, alternations of slabby ss and shales. Some of the ss are shale conglomerates having many balls of clay in them, or flat clay masses.

Fossils

C. mucronatus. in shaly ss at 1450'



This represents transitional? beds into the U. Anany bridge?

1300' a small cascade of
blue shales sparsely
fossiliferous.

C. tenuistriata

H. dehaagi

Lepteria ?

N. lirata

C. congregata

N. bellistriata

O. carinata

J. carinatus

J. submarginata

P. emarginata

Lingula sp. cf. *delia* in
upright position

C. bellistriata

C. tenuistriata

S. channingensis

Goniophora sp.

M. arcuata

D. constricta

A. erectum

L. hamiltoniae

1310' a hard sandy
band forms a flat at
the road intersection with
the stream.

1373' thin slabby ss. with
grey color.

1374' grey shale, irregular
fracture. *C. congregata*

1400' grey shale, purple
weathering, *S. pennatus*

found on
side hills
south of
stream.

6

The hard ledge is at 1465' forming the top of the hill

1313' blue shales weathering to purple color. They are comparatively soft and contain the peculiar concretionary masses referred to Cephalopods by Miss Goldring. Trilobites is common in this portion of the bed but other fossils are comparatively more rare and mostly Pelecypods.

At 1319' the rock is getting harder with more fossils. Its appearance when fresh is still blue but it is coarser does not become purple on weathering and is more compact, crumbling less readily.

1325' The beds are still more massive

The interval 1325-1328 establishes the hard compact rock with blocky fractures, abundant large fossils. It also has tubes of dark clay sandy clay running vertically in the beds. *S. perplana* common

1328-1328 1/2' sandy stone splitting in large slabs contrasting with the blocky rock below.

1328 1/2' - 1335' massive sandy shale

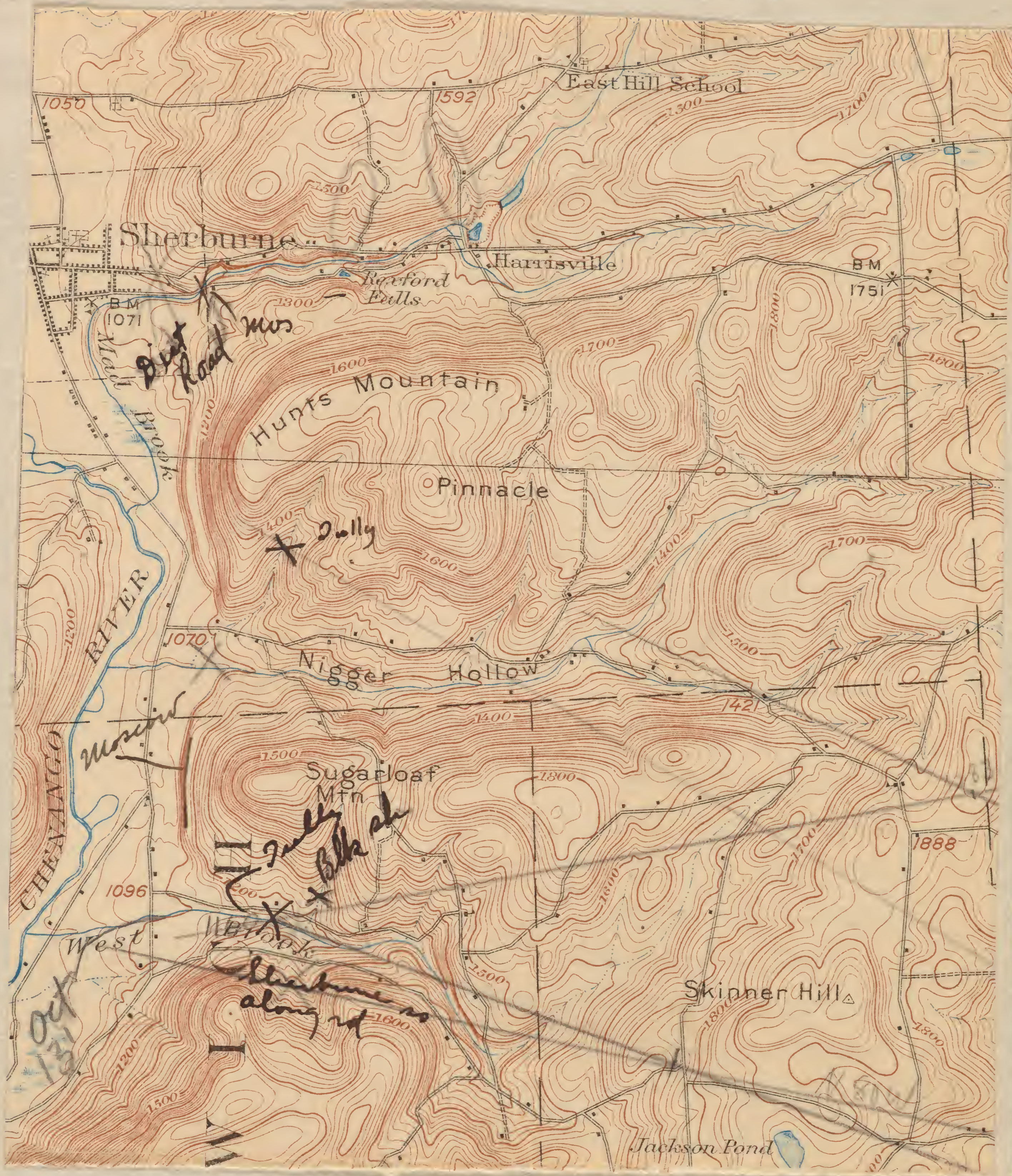
6

The fauna is remarkably homogeneous throughout, the whole layer being best abundant in the soft shales at 1313 and most abundant at 1320-1333.

One set of joints is prominently developed but are irregularly spaced, from 2 to 5' apart. This set with smooth regular planes trends N34E and is nearly vertical. The second set trending N54W is very poorly developed and the planes have curved irregular surfaces not susceptible to measure.



1166a



Oct. 13.

Ravine on S. side of Hunt's Mtn.

First rock encountered at 1110' + 70' 20" or 1186' A.T. This rock is only in a small patch and cannot be collected.

1186' — 1191' 5" — same

1191' 5" — 1196' 10" — a small cascade over sandy stones that are hard. On this come softer sandy shales.

1196' 10" — 1206' 20" — sandy shale — blue and crumbling in clumps with:

A. lapidifera index

L. laura

S. planchatus

A. reticulatus

T. carinatus

1253
1186
47

These rocks are quite sandy in places but in general preserve the blue gray color characteristic of the Moscow rocks.

1206' 20" — 1216' 30" — these rocks are very difficult to collect and seem to have few fossils. The *L. laura* was found just below the ss at 1196'.

1216' 30" — 1226' 40" — sandy shales + ss quite unfossiliferous. A sandy slab at about 1231' 45" has *A. depressa* the mould of a cup coral & crinoid stems. It may be out of place.

1226' 40" — 1231' 45" — same.

8" ss.
 4"
 hiatus covered sh? 10'
 ss
 hiatus
 5' blue gray sh.
 sh
 Bully
 1276' 85"

M
 O
 S
 C
 O
 W

85'

1241
 4
 1245

1283
 1245
 (38)

38
 11
 47
 96

1196' 6" ss.

Each of course 5'

1231'40" — ~~1238'45"~~ 1241'50" — The shales are considerably softer but still quite arenaceous. Fossils here are:

<i>V. pustulosa</i> cc	<i>S. pennatus</i>
<i>P. discoidium</i>	<i>S. tullius</i>
<i>A. spiniferoides</i>	<i>C. satigenus</i>
<i>R. vanuxemi</i>	<i>P. carinatus</i>

There are about 5' of these shales exposed here, from 1236' to 1241'

1241'50" — 1246'55" — same sandy sh. Fossils:

<i>G. capillaria</i>	<i>C. boothi</i>
✓ <i>S. pennatus</i>	✓ <i>C. satigenus</i>
✓ <i>C. bellistriata</i>	✓ <i>M. corbiformis</i>
✓ <i>P. emarginata</i>	✓ <i>M. subulata</i>
✓ <i>S. tullius</i>	✓ <i>M. bellistriata</i>

Grummysia sp.

The Vitulinas appear to be limited to the horizon 1236' - 1241' as none were noted. About 25' of rocks exist above this horizon and I was able to find *S. pennatus* thru the whole 25'. All of the 25' is a sandy shale with thin ss layers coming in at the top. The rock weathers to a olive color.

1246'55" — 1266'75" — same

1266'75" — 1271'80" — sandy sh with some ss. ✓ *S. pennatus* cc, ✓ *P. carinatus*, *C. scitulus*. The shale becomes harder toward the top of the cascade.

1271'80" - 1276'85" - the first 4 1/2' of this interval are sandy shales & ss with *S. pennatus*. The last foot is of a shaly ls. This ls. is characterized by its fluted weathering in the stream bed. In cross-section the stone is blue grey with some crinoid remains in it. Its elevation is 1282' A.T. The bottom layer is nearly a foot thick (?) and has a typical ls. weathering. Fossils in this layer are very rare, only an occasional very small cup coral being observed. The next layers are shaly with some heavier masses of shaly ls. at about 5'5" and above the base and for a foot below the level of 5'. The rock is a shale and has specimens of *Cyt. hamiltonensis*, *Fenestellids* ac, *P. rana*, *A. spinosa*. In a hard ls. layer about 1 1/2' below 5'5" were found *S. cristatum*? The shales are like those with *Cyt. hamiltonensis* in Warner's Gulch east of Georgetown. The appearance of these shells above the sequence which yielded *U. pustulosa* is strong proof of the Tully.

Shales with corals can be found up to 5' above the 5'5" level. Thus the Tully here would be 10'5" thick.

On the Tully come soft shales that break into slabs which have every appearance of the Genesee

except the black color, they are more alive

6' above Tully is exposed about 3' of shales that break into thin plates. They are blue grey in color & are probably Sherburne.

There is 11' of hiatus between this exposure and the first exposure of ss. which has an irregular fracture.

14' above these is a cascade over an 8" ledge of ss. Below the ss ledge are rather soft shales.

This ravine was followed as further

$$\begin{array}{r} 1282 \\ 1168 \\ \hline 114 \\ 1.6 \overline{) 11.2} \end{array} \quad (70)$$

(91)

$$1.6 \overline{) 30} \begin{array}{r} 18 \\ 128 \\ \hline 120 \end{array}$$

Oct. 13'

West Brook

First rock seen at about 1098' A.T.

1098' - 1143' 45" hiatus

About 3' of unconsolidated shales are exposed on the north side of the Brook just below 1143' 45". The bottom of the shales would be at 1140' 45" A.T. Fossils are fairly abundant and a hasty search yielded:

- | | |
|--------------------------|-----------------------------|
| ✓ <i>S. tullius</i> c | <i>N. corbulariformis</i> c |
| ✓ <i>S. pennatus</i> c | <i>S. chemungensis</i> |
| ✓ <i>T. carinatus</i> re | <i>C. setiger</i> |
| ✓ <i>P. planus</i> ? | <i>L. pinnatus</i> sp. |
| ✓ <i>P. marginatus</i> | ✓ <i>L. discoides</i> |
| | ✓ <i>L. oculatus</i> ? |

1143' 45" - 1148' 50" - addition of fossils
T. submarginatus, *L. laura*, *C. elliptica*

1148' 50" - 1153' 55" - *S. pennatus*, *C. both*,
C. setiger, *L. pinnatus*, *T. carinatus*,
C. setiger, fossils are scarce

1153' 55" - 1158' 60" - same with thin
 at top of the interval

1158' 60" - 1163' 60" - 1168' top of fall.
 The fall is about 10' high. Below
 the fall is a sandy shale zone over
L. pinnatus re *C. both*
T. carinatus *L. pinnatus* sp.
C. setiger

Tully on top of falls - base at 1168' A.T. - Bottom layer oolitic 4" thick, then about 12" - 15" sandy stone breaking into thin slabs, then 3-6" shaly ls. (?), 4" of hard ls., 2 1/2' of very fossiliferous shale, capped by 2" of hard very light grey ls.

The ss. near the top of this horizon had crude ripples in it with a trend NW-SE. On the ss was a hard ls.

The 2 1/2' of shale I would correlate with a similar blue shale noted about 20' up in the Tully in the ravine at Georgetown where it is at 1644' A.T. Also in Warner's Tully where, according to my recollection it is only a few inches thick. On the sh. is an inch or two of hard light grey ls. with abundant *Orthis*, *Platyceras* & small corals. This band should correlate with the 4 or 5" layer with abundant *Platyceras* & small corals in the Georgetown ravine.

I made the whole Tully here between 5' 6" - 6'.

On the Tully is a bluish shale, which above for two or 3' seems somewhat limy, then the shale breaks into small chips on exposure and is quite like the typical Genesee except for color. Prof. Whitwell thinks that the first 2 or 3' are Tully. Perhaps more of the shales are Tully. We found dark ~~sh~~ shales for at least 52'?

50' or more, from top of Tully up to 20' up in the first ravine on the north. Shale slabs were found for more than 50' in the air.

1173

My hand-leveling in this ravine does not accord with the map. The fall is just west of the farmhouse perhaps 70' or less and this would make the exposure according to the topography at 1157' A.T.

The Vitulina zone must be below the rock exposed here.

West Brook

Nov 14,

1. Oolite - $4\frac{1}{2}$ " thick - about $\frac{1}{2}$ " of transition to Hamilton rocks - Fucoidal? markings - fossils sparse. Fluted weathering surface, strong effervescence, weathers on surface to a tawny brown.

The oolite makes the basement bed.

2. $1\frac{1}{2}$ " - ss. break into thin slabs, with fucoidal markings, weathers to a brown color, fossils rare, occasional fluted surface?, obscure ripples, plate parting like bedding, weak effervescence.

- 3' - 15 " - calcareous stone, weathering to a brown fluted surface. Solution in stream bed has progressed to ss layer giving appearance of a lag in bed in middle of stream - splits in 3 layers $6\frac{1}{2}$ " (bottom), 5" middle, top 3" - $3\frac{1}{2}$ ".

Fossils, none observed - Effervescence rather weak.

- 4 - ~~35~~ ³⁵ blue shale - very fossiliferous.

- 5' - 1-2" calcareous sh. transitional to ls coming in above. Trilobites common, Proetus, etc. but less fossiliferous than blue shale also blastoids.

↑
7 2" transition?
6 2 1/2" ls.
5 2" transition

4 33" - blue sh.

72 74 1/2"

3 15" ? ls.

2 15" ss?

Each spec. 3"

1 ss lite 4 1/2" with Hypothyris

6. — 4" — light grey ls. with
Cephalopods, *Platyceras*, *Crinoid*
heads, *Productella*, etc.
7. — 2" — calcareous sh. transitioning
to shale above.

8. — bluish fine gr. sh. — in places
a ss. and gritty.

All measurements here from top of Bed 6.

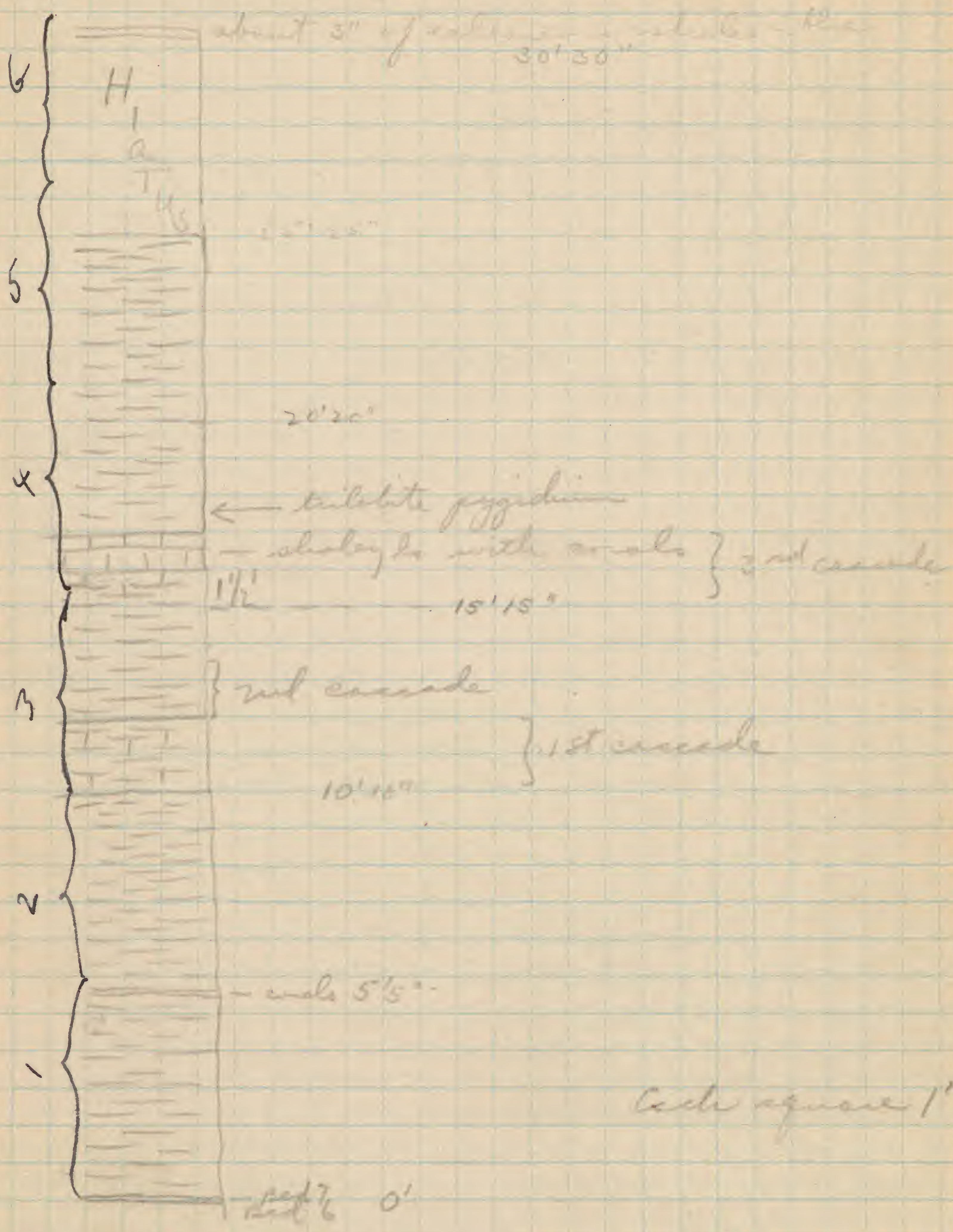
1st 5'5" — mostly dark blue grey shale
that weathers in patches (vertically) to
a light grey. Probably a localization of
 CaCO_3 accounts for the harder beds.
In places the shale peels off like the
Hemlock into rather thin chips.
Large slabs have the curved surfaces
so characteristic of these shales.
In places the shale is gritty. At the
top of this interval a few small
corals were found where the
shale is calcareous and a
little more resistant.

2nd 5'5" — similar shale with
occasional thin beds of ss. and ls.
The shales weather to a light olive.
No fossils were observed in this
interval.

3rd 5'5" — calcareous, blue-grey shale
that weathers to an olive or brown
color — I observed no fossils. This
interval includes two low cascades,
the lowest of $1\frac{1}{2}$ ' — the uppermost
of about $1\frac{1}{2}$ '. There are about
2' of the shale that weather
olive and they compose the
first cascade that is
encountered above theully

Penasquito

Bed 2 + 3 both give weak
 effervescence but 2 has the
 flatter fracture. Also some minor
 amount of calcareous sh in both.



ls. horizon. This shale of the first cascade is rather lumpy in fracture. It forms the very bottom of the 3rd step and rests on blue grey shale that breaks into chips. *Planolites* was the only fossil observed in these. This shale seems to be quite sandy. On this comes a blue grey shale in the stream bed which has been worn smooth. This shale contains irregular brown patches, usually not more than $1/16$ " - $1/8$ " thick composed of sand. This stone continues its about 1' up in the next and 4th step, where a $2\frac{1}{2}$ - 3' cascade may be seen behind the second dwelling ^{which is} on the south ~~side~~ side of the north road just south of where the side gully crosses the road. This cascade is formed by a compact layer of shaley ls about 1' thick? of

4th ^{+ 5th} step - The remainder of this step for about 3' is calcareous shale in which were seen wood, *Planolites*, a trilobite pygidium and the living chamber of a *Cephalopod*.

In the fifth step the rock is softer, is calcareous & has *Planolites* and ss patches like those below

11th step.

10th

10th step approximately 1235' A.T. from camp.

10th

9th step

9th

8th step

8th

dark shales with brownish color
interbedded

7th step

High ?

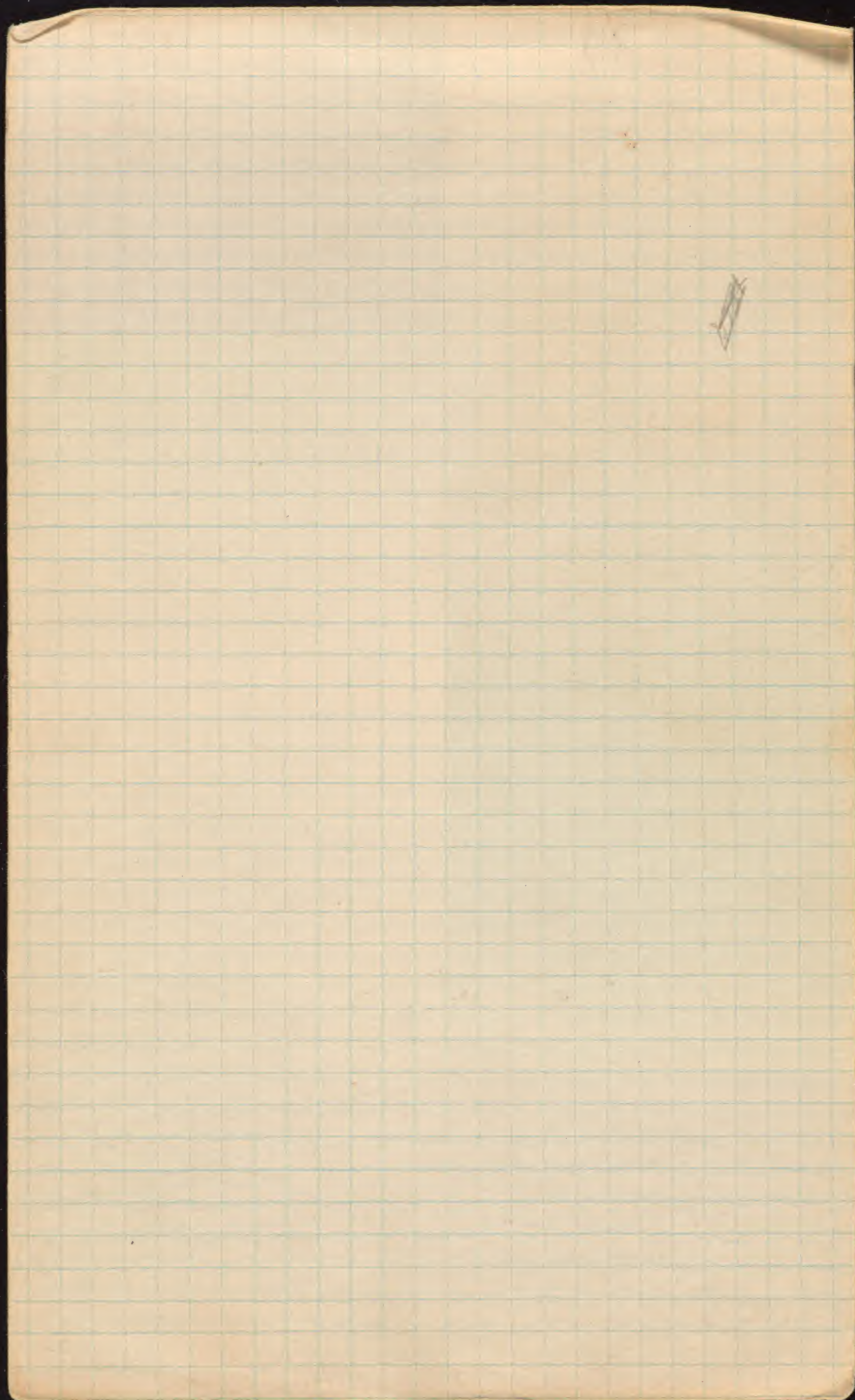
15' 30'

16th step - hiatus except at top
 7th step - hiatus for about 3' at
 bottom, but above, fissile shales
 with a brownish-white streak.
 These are much different from
 those below which broke in pieces
 irregular & rather thick, but
 these shales break into thin flakes.
 A goniatite was found in them.
 8th step - a 3' patch of fissile sh.
 The 9th step has some shale with
 thin ss beds. The shale appears
 to be blue grey.
 The 10th-11th steps is predominantly
 rather thick beds of fine-grained
 ss. that split with a curved
 fracture. This is probably where
 the Sherburne comes in.

The brook was walked up to
 the 16th step above the top of the
 Tully and only ss of the
 Sherburne were observed.
 Therefore the Sherburne comes
 in at about 1220-1225' A.T. by
 hand-level it comes in at
 1234'. Beyond the 10th step
 not a single crumb of
 bluish sh. was noted.

440 paces from bottom of Sherburne
 to top of 3rd. cascade.
 39 paces to 2nd cascade.
 36 " " 1st "

The first cascade is located
 exactly at the union of West
 Brk. with the first side gully
 on the north side going east



三

55' 55"
 50' 50" 10-11
 45' 45" 9-10
 40' 40" 8-9
 35' 35" 7-8
 30' 30" 7
 25' 25" 6
 20' 20" 5
 15' 15" 4
 10' 10" 3
 5' 5" 2
 Blue sh 1
 Blue sh
 same
 Blue sh

1225
 1168
 67

1168

16
 5
 3

1140
 4
 1144

1168
 1147
 21

6"
 33"
 15"
 15"
 4 1/2"

1163' 60"
 1158' 60"
 1153' 55"
 1148' 50"
 1143' 45"
 1140' 45"

Tully South Lebanon 1612'

5' 5" - 1st heavy bed of $1\frac{3}{4}' - 2'$ in thickness contains *Hypothyris* and near Tully-Mos. contact *L. pectinatus* & other *Dipirifers*. However *H. cuboides* was found among these. 3' 5" from base is a shale band about 4" thick, then ls. and more shale, but this time calcareous shale.

10' 10" nearly all covered, about a foot at bottom is ls. and at top is shaly ls. breaking into slabs.

15' 15" Shaly ls. breaking into slabs only exposed at the top.

20' 20" Same - mostly covered but in middle a foot or so of shaly ls. At 20' 20 is a band of sh. with fossils. On this is a 4-6" layer of hard ls. with coiled cephs, *Platystrophia* etc.

25' 25" - $1\frac{1}{2}'$ mostly hard ls. The band on which the *Hennessee* rests is 6" of hard ls. which breaks into flakes.

Total thickness ~~27~~ 25' 7"

25' 11"
2' 2"
27' 3"
27' 6"
25' 7"

Some of stone at contact is shaly with lentils of crinoidal ls.

July 3 - Collecting all day

July 1885

1 mile N of Georgetown

0 The first 5' 5" consist of ls. heavily bedded at bottom. Bottom layer splits into blocks 2' thick. In this layer *H. cuboides* was found, not abundantly however. In this bottom layer also *S. pennatus*, *T. caninatus*, *S. Tullius*, ~~etc.~~ were found. The first inch of the Tully is somewhat shaly probably belonging to the Moscons. Between the base + 5' 5" the stone is hard ~~but~~ and above the 2' ~~thick~~ bed the beds are thinner 9" - 4". At 5' a shale band was found with many small corals. The corals were first seen in the top of the 2' layer. In the shale at 5' besides corals were found *B. led.* and *pygidia* + cephal. of *Cyphæus*.

10' 10" The next 5' 5" are made up of shaly ls. brittle and falling to fragments with a blow of the hammer. Some of the mass is a heavy blue ls but this is subordinate here. The shaly ls. weathers with the same pitted or pocketed character as the more massive stone below. Few remains of fossils are seen on the weathered surfaces here, Corals occur in lowest layers.

15' 15" ls. decidedly ~~the~~ grey in upper part but mostly like that below

20' 20" - mostly covered, but upper layers of sh + ls. have yielded most of my fossils. *Platycerids*, *Cyrtoceras* etc.

25' 25" - ls and then comes *Gemmas*
Total thickness $25' + 2' = 27' 1"$
Actually nearer 30'

$$\begin{array}{r}
 1130 \\
 28 \\
 \hline
 1158 \\
 60 \\
 \hline
 \end{array}$$

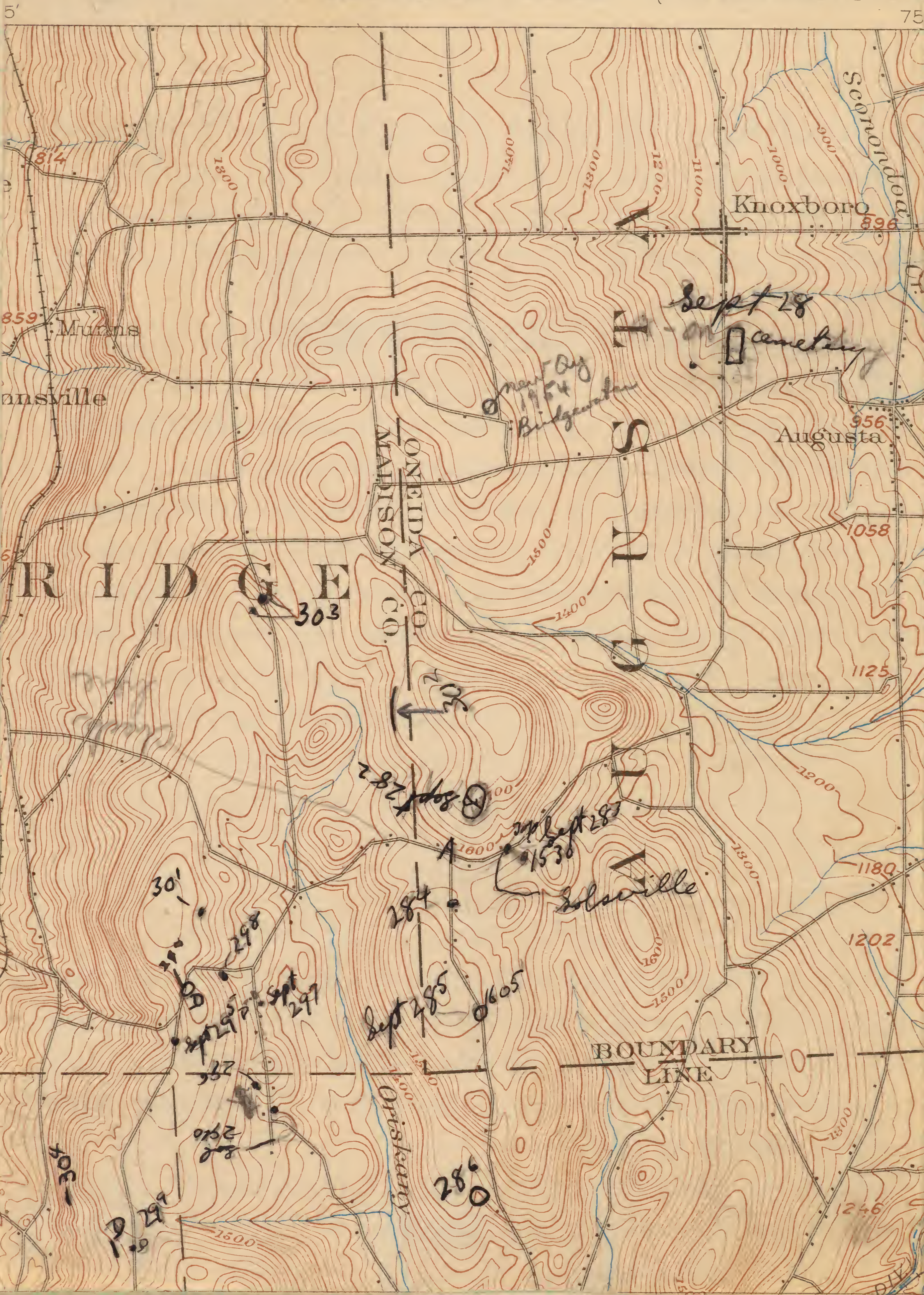
$$\begin{array}{r}
 1310 \\
 8 \\
 \hline
 1318
 \end{array}$$

$$\begin{array}{r}
 1318 \\
 1210 \\
 \hline
 108 \\
 60 \\
 \hline
 168
 \end{array}$$

1931

1182

NEW YORK
MORRISVILLE QUADRANGLE



Sept 28¹ - Knox boro - Checked Roof's elevation on top of Oniskany at about 1288 (16 hand-level steps) - This locality is opposite Cemetery, not shown on map.

A little S along the road I saw no Oniskany but I believe the base of the Onondaga is in a small knoll at the second fence from the gully or at 1180'

Sept 28² Small Quarry in Delphi 38' below top of hill at about 1712'. Top of hill is coarse Delphi. Shale of 10' quarry lumpy with small *Spirifer*, *Tropidoleptus*, *Bentleyia*, *Loxonema*. - This is apparently the *Loxonema* zone. The top of the Mottville is 15' lower at about 1698'. I guess top of hill at 1750.

Sept. 28³ small quarry in Solville between 2nd & 3rd houses from corner A. at about 1530'. This qy is near the bottom bed; *O. constricta*, *Loxonema*, *Chonetes*. The top of the Solville forms a ridge just under the 2nd house from corner A. at an elevation of about 1570 ~~1575~~. Second house is G. S. Palmers and sits on an eminence of the Solville

28⁴ Upper Ambocoelia beds of Pocksport

Sept 28⁵ - Mottville - top about 1605'

28⁶ - Top of Solville at 1400 - *Loxonema* abundant.

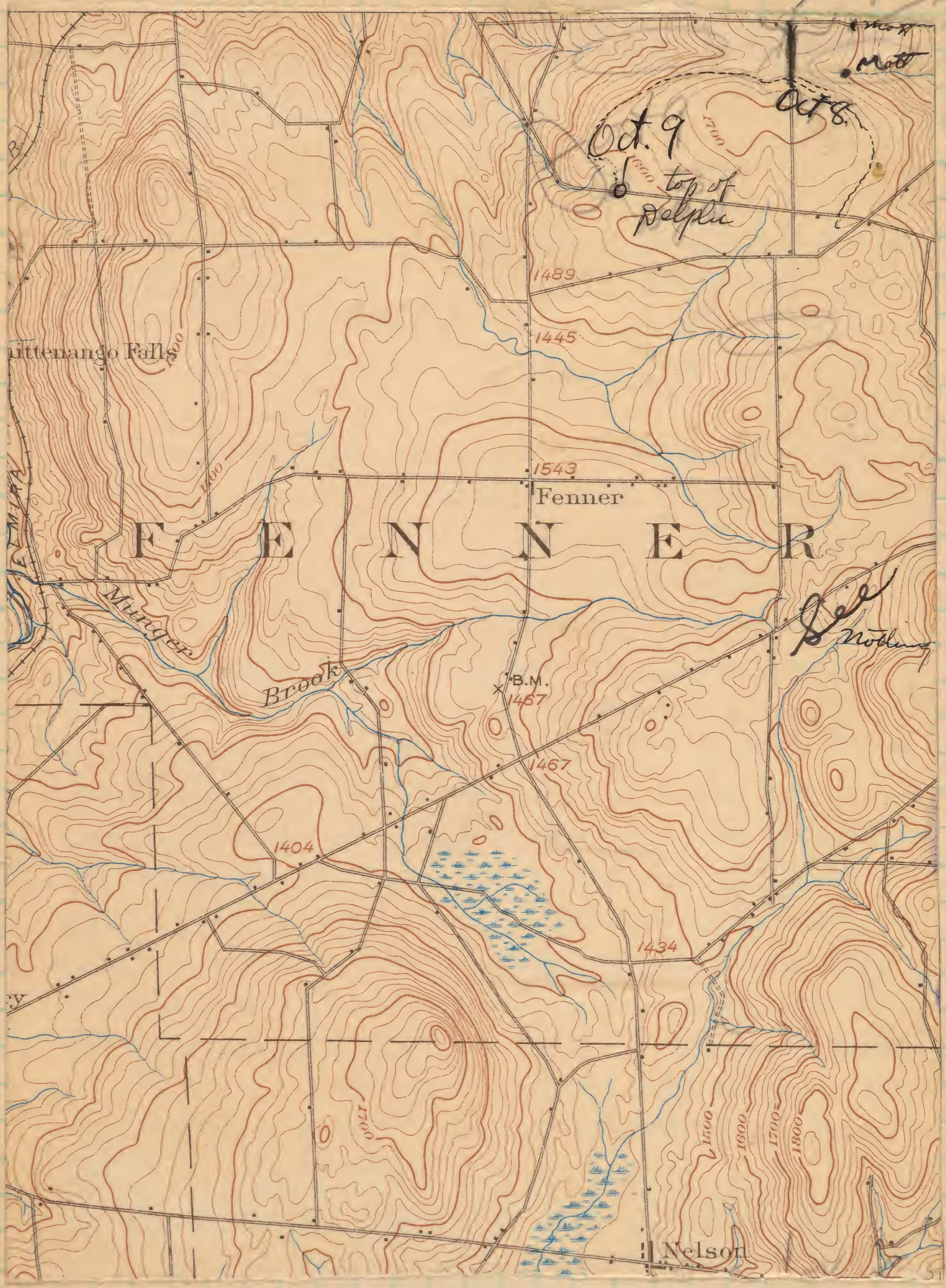
Onondaga - Marcellus contact 0.2 mile
W of X-roads

4/3
1184 F



Delphi
1184
10
∞

1184a



450 350

1185

2.5
70
175.0
1480
1655

2.5
70
175.0
1480
1655

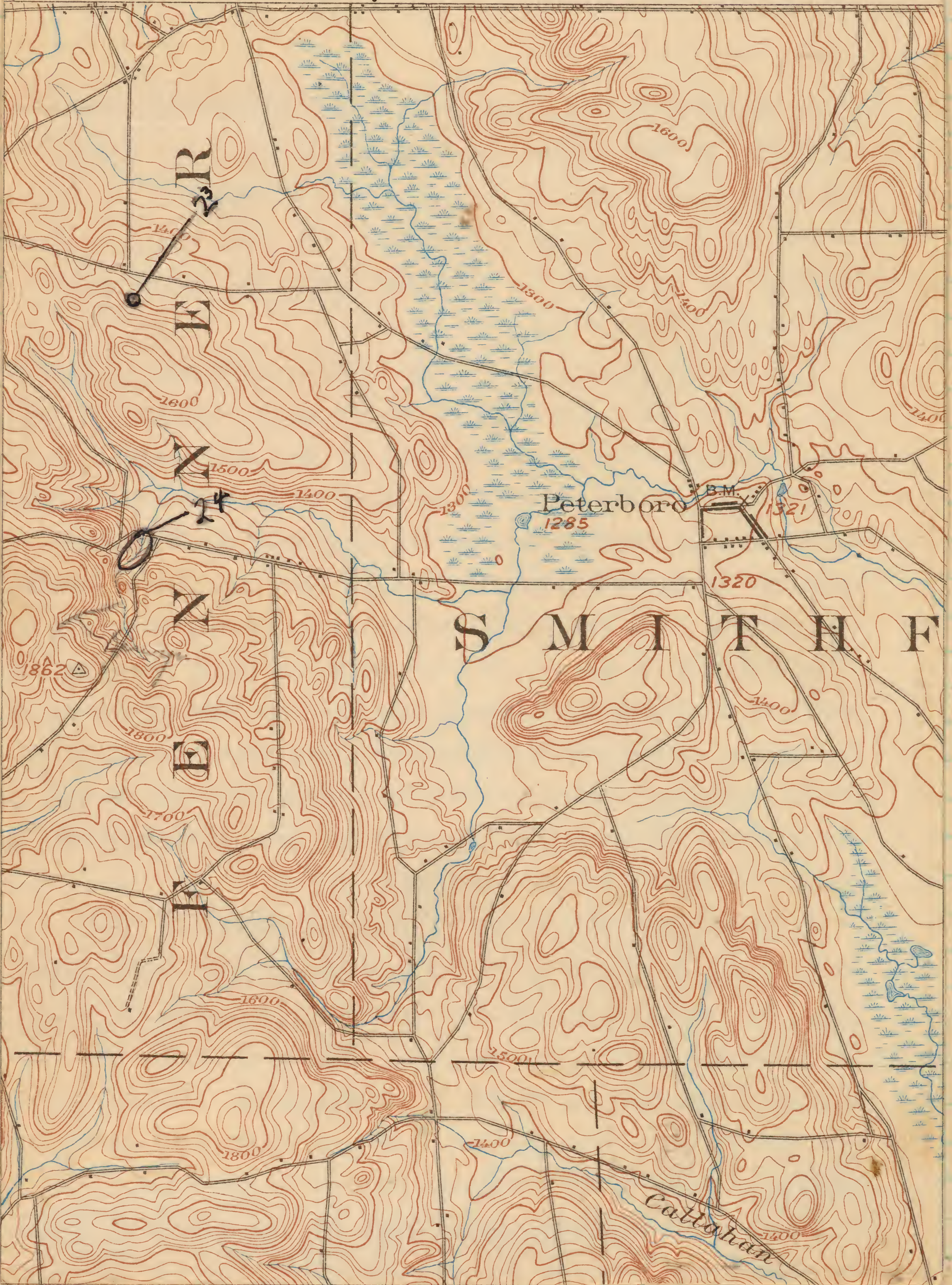
2.5
70
175.0
1480
1655

1470

DEPARTMENT OF THE INTERIOR
U.S. GEOLOGICAL SURVEY

45

4



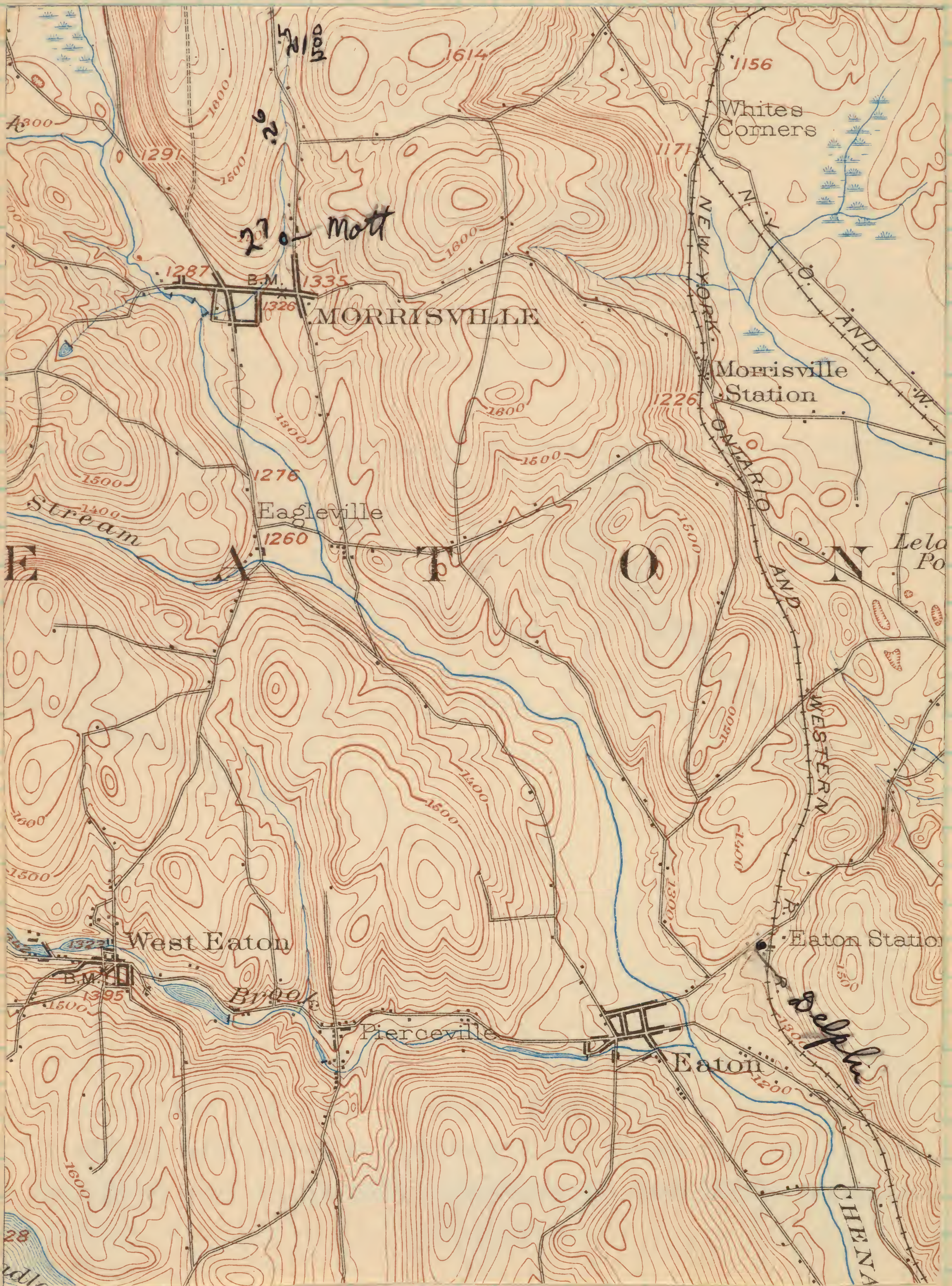
$$\begin{array}{r}
 19 \\
 5 \\
 \hline
 95 \\
 8 \\
 \hline
 103
 \end{array}$$

$$\begin{array}{r}
 1267 \\
 160 \\
 \hline
 1427
 \end{array}$$

$$\begin{array}{r}
 6361 \\
 991 \\
 \hline
 6951
 \end{array}$$

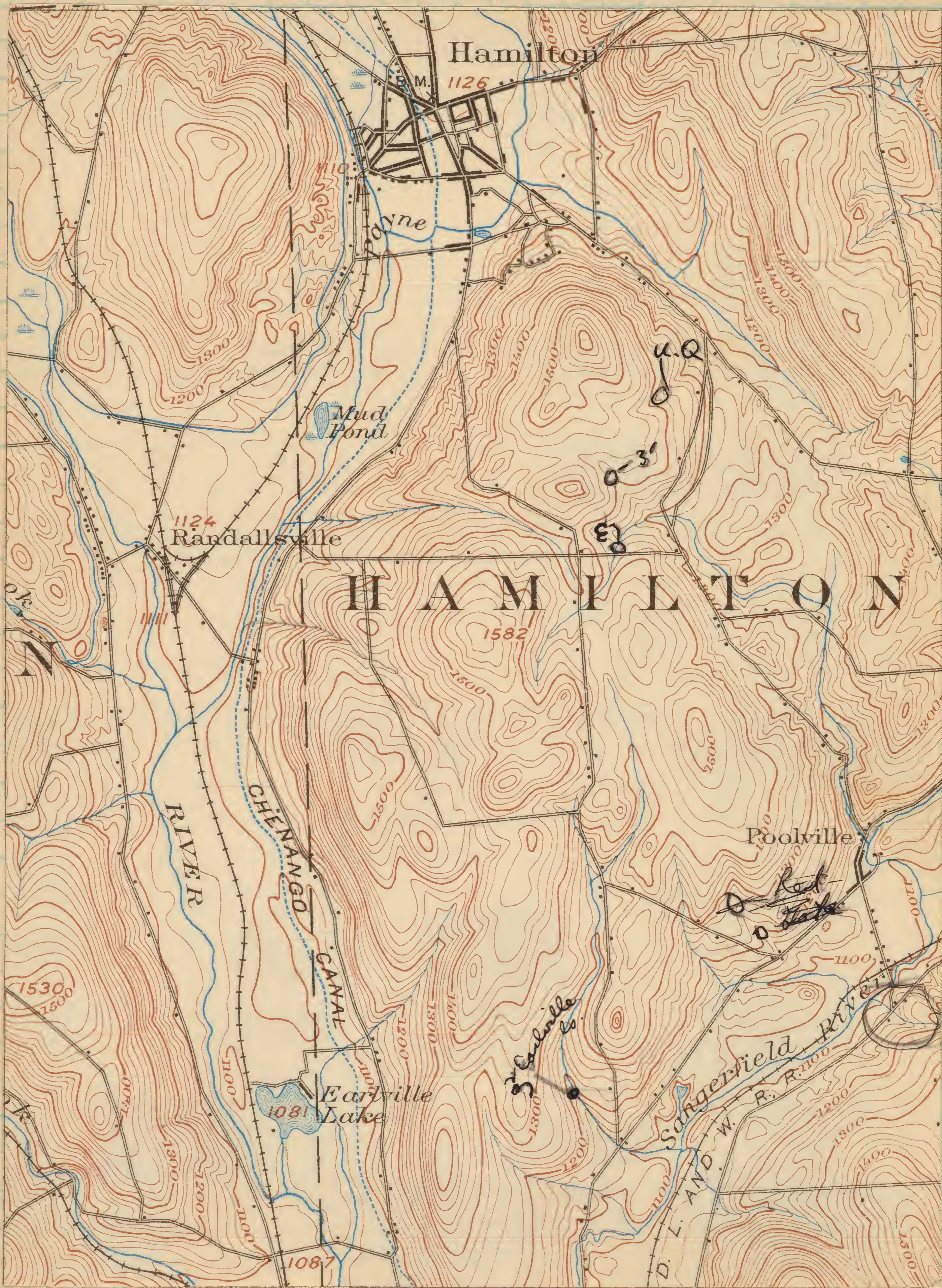
$$\begin{array}{r}
 26 \\
 115 \\
 10 \\
 \hline
 1520 \\
 1045
 \end{array}$$

1187 F

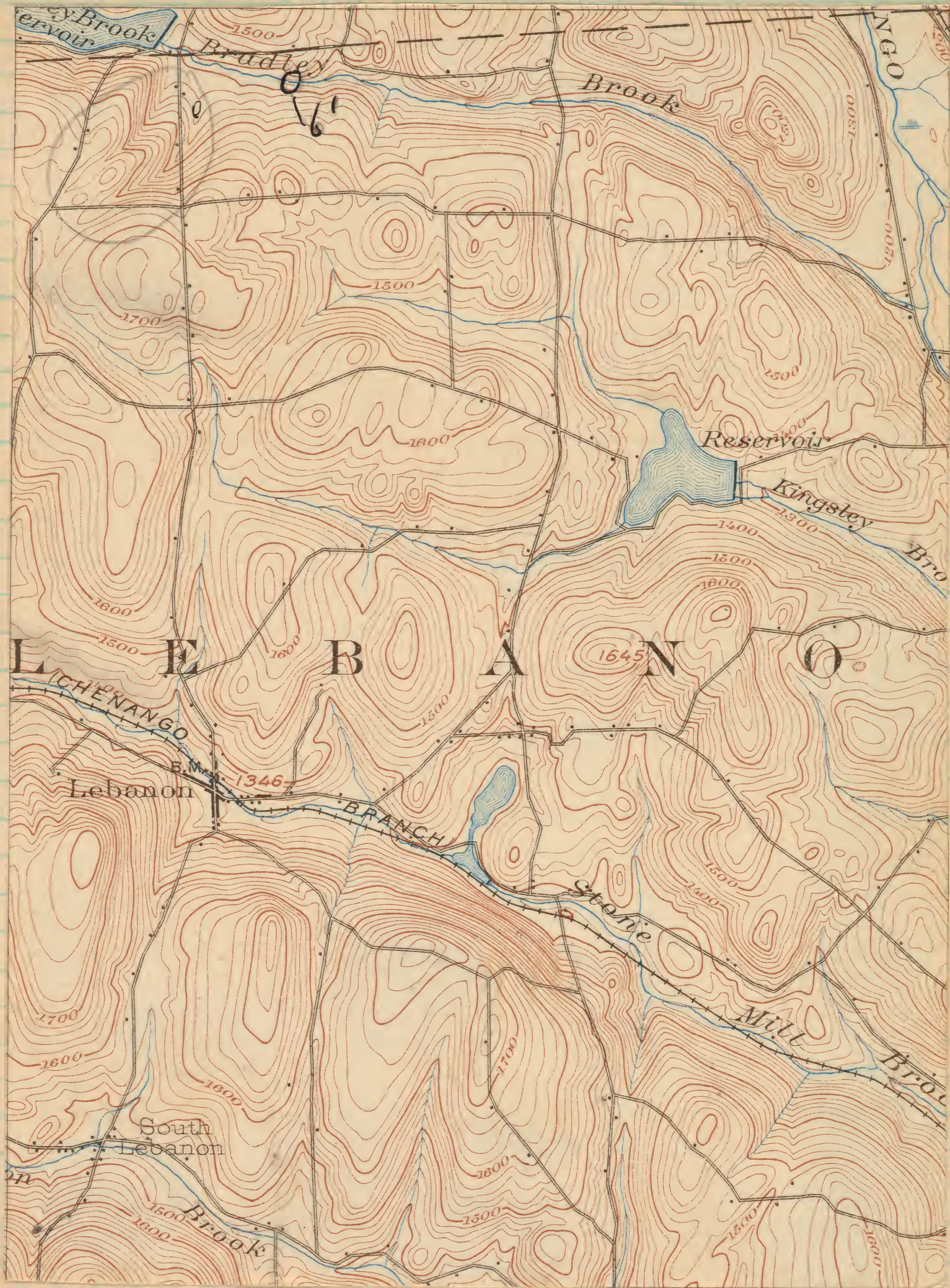


1188





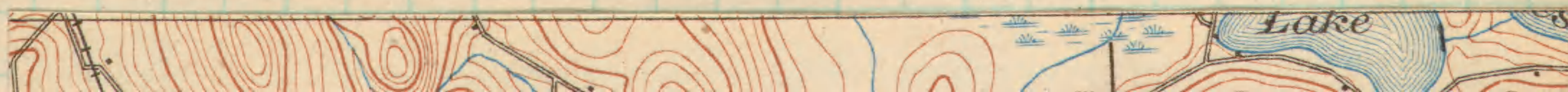
$$\begin{array}{r} 400 \\ 3 \\ \hline 800 \end{array}$$
$$\begin{array}{r} 1000 \\ 5 \\ \hline \end{array}$$



1805

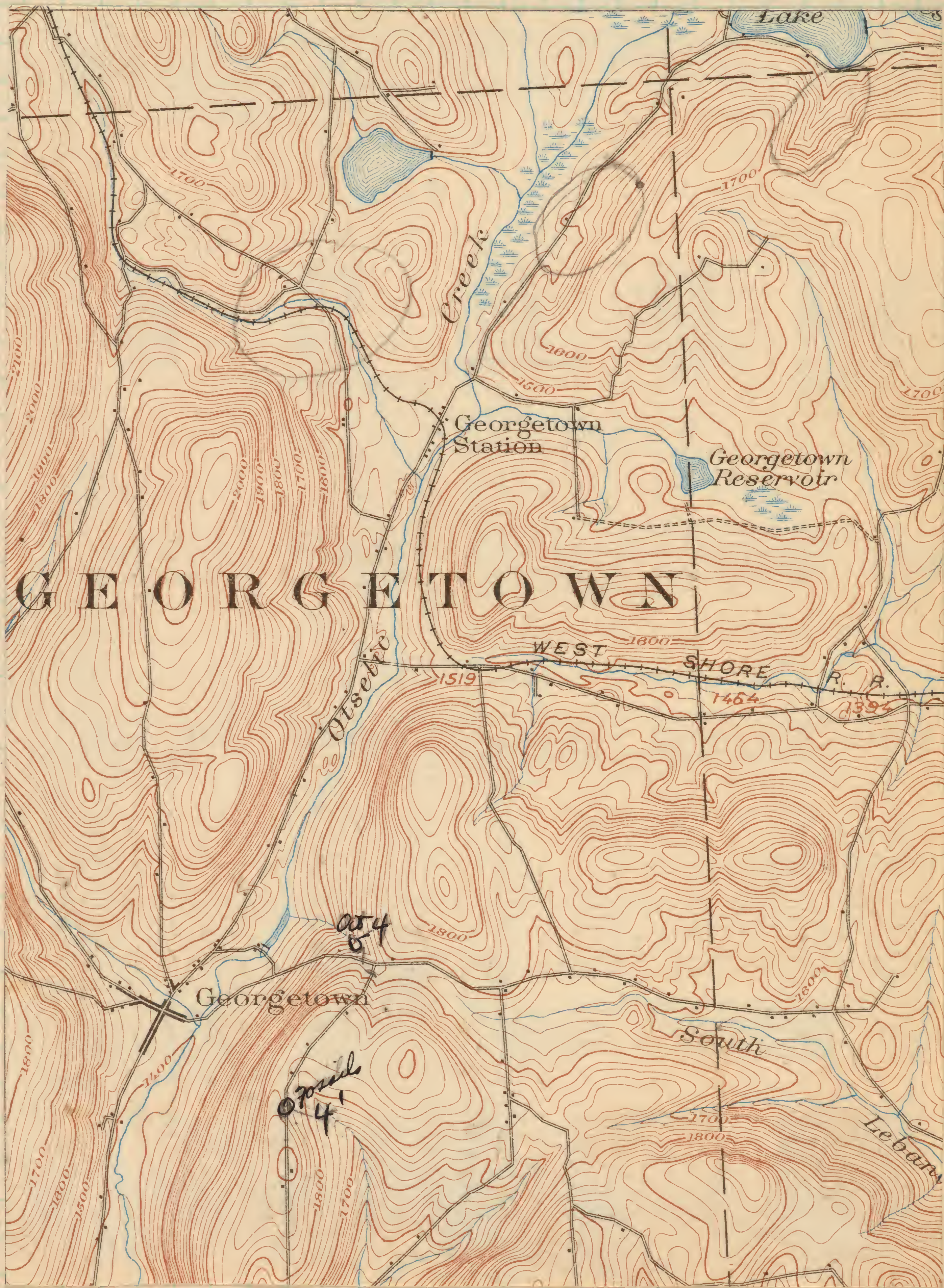
1680

1191



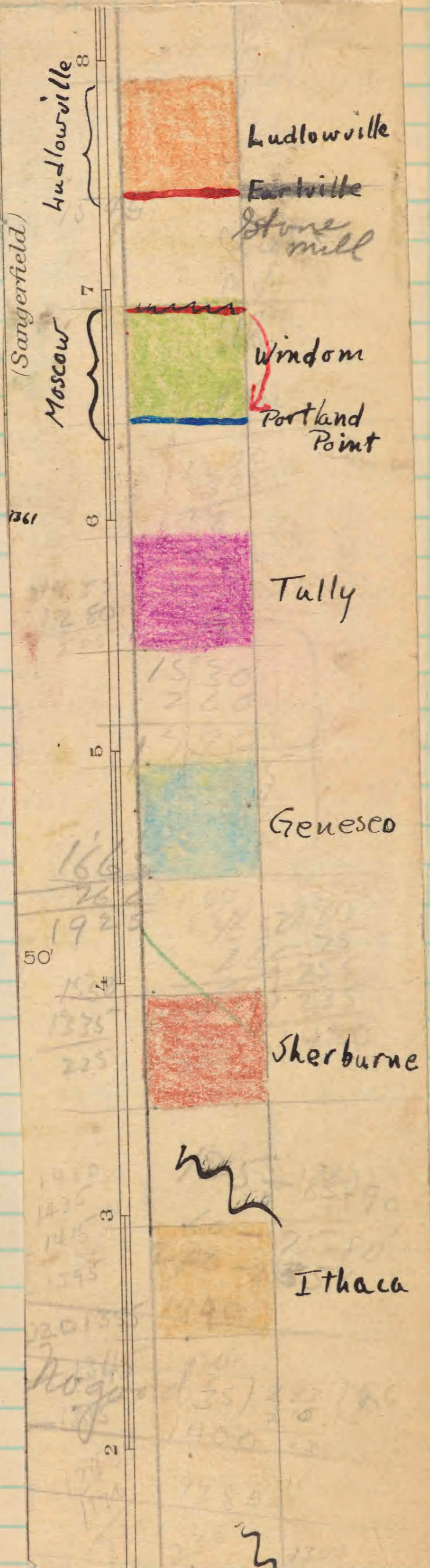
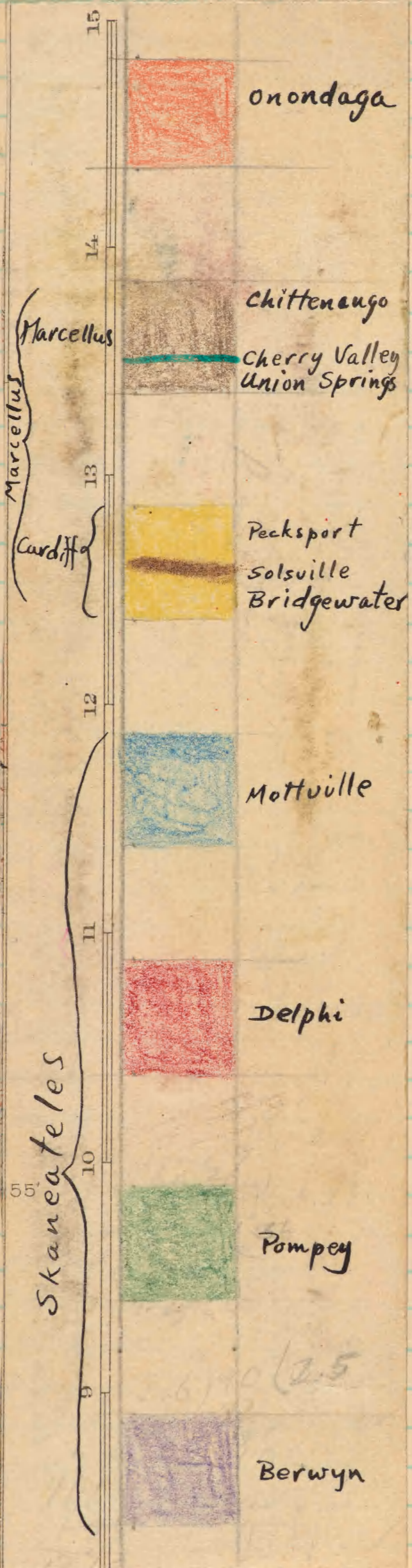
1680

1191



Handwritten calculations in blue ink:

$\begin{array}{r} 1680 \\ 1620 \\ \hline 60 \end{array}$	$\begin{array}{r} 1860 \\ 455 \\ \hline 1634 \end{array}$	$\begin{array}{r} 1860 \\ 1634 \\ \hline 226 \end{array}$	$\begin{array}{r} 1860 \\ 1650 \\ \hline 180 \end{array}$	$\begin{array}{r} 1860 \\ 1572 \\ \hline 298 \end{array}$	$\begin{array}{r} 1860 \\ 1572 \\ \hline 298 \end{array}$	$\begin{array}{r} 1860 \\ 1572 \\ \hline 298 \end{array}$	$\begin{array}{r} 1860 \\ 1572 \\ \hline 298 \end{array}$	$\begin{array}{r} 1860 \\ 1572 \\ \hline 298 \end{array}$	$\begin{array}{r} 1860 \\ 1572 \\ \hline 298 \end{array}$
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Sept. 29 - Solsville ss. in 1930 was a good outcrop but now nearly covered by dirt being washed over it.

Pine Woods - Peckport - Solsville contact is shown on S side of road at bend about 50 yds east of road intersection. at about 1705'. The Solsville here is hard irregularly bedded argillaceous ss. with some thin *Trinacromma* in abundance. Other fossils are *Spinifer* sp., *Paraceras*, *Reptinoceras*, *Lingulites*, *Leptostrophia*, the latter is common.

Sept. 29' - beautiful exposure of Solsville exposed (full section) for some distance in gorge

29' - lumps of Delphi - not in place

24	24	34	1297	297
24	24	34	1205	1502
24	24	34	1205	1502

Sept. 29³ - Top of Solsville in small gully at 1332' (24 that level steps above 1705') at 54 steps is the top 5' or 7' of the Mottville, at 1489'. The top of the Mottville is 157' above the base top of the ~~Delphi~~ Solsville. The top of the Delphi is about 75 yds west on the road from the house at 1570'. I make the top of the Delphi to be 1600'. There is clearly no Berwyn in this part of the hill.

At the top of the Delphi is a layer in which *Rhipidomella*, *Spermaturus*, & *L. pectinata* are abundant. Also *A. cora*. A little below the top (about 5') is a layer with abundant *C. syntaxis*. There is possibly *Pomper* Continues *E. Lincklaami*

294 - Delphi in road - near top. To west and forming ledge of ridge is Delphi about middle my map is inaccurate here for Mottville would be about 40-50' below ridge or at about 1450-60'

295 is 425 paces from V crossing. It is 1192a
clearly Delphi. A spring 30' below the house
suggests the Mattville land band. This would
put the Mattville at 1460 or 70'. I can't
tell where I am in the Delphi here.

296 - small qy. 15' high - lower Pecksport
A. umbonata, *S. pinnatus*

Sept. 297 - Top of Solsville at ¹⁴⁴⁵~~1450~~ at house
~~about~~ on W side road - behind house is
Pecksport.

298 Small Qy in Pecksport - fossils quite
abundant. Large sp. *S. pinnatus*, *Mod.*
concentrica, *Grammysia*, *Ambocoelia*,
Chonetes, *Phacops*, *Atthis*, *M. mytiloides*,
P. lirata, *P. obsoleta*, *R. cyclos*, *S. granulosa*.

299 - Road above Qy 298 - Pecksport for at least
20 steps, top of hill is Delphi. *Horwema* -
Bembexia zone at 26 steps or 1565'. The Mattville
appears to be at about ~~1565~~ or at 22 steps.

1565'

1450

2910 top of Solsville

Sept 30

1193

30 - Remeasured road section of 29⁸. I started from the top of the Solsville at the house & it took 30 1/2 hand level steps to the top of the Mottville which is exposed in the roadside. This makes the top of the Mottville 165' 15" above the base of the Solsville. The contour line is wrong or the hand-level is wrong. I found the top of the Mottville 25' above the top of the hill which would put it at 1580' which is probably the true elevation. From topography etc. I should say it is about 1575'. Apparently where I have it is about O.K. but the Solsville is a little too high. The fauna of the Peckamport here shows the great influx of Hamilton species.

30¹ - small exp. top of Mottville in a gully. Top of hill covered with loose Delphi pieces

30² - Solsville - whole section, exquisite exposure - fossils plentiful

<i>Anthracantha</i>	<i>G. muchonatus</i>	<i>Epyrenas</i>
<i>Sosacletia</i>	<i>P. flabellum</i>	
<i>C. continens</i>	<i>L. perplana</i>	<i>C.</i>
<i>Nucleospira</i>	<i>M. concentrica</i>	

Top of Solv. between 1600 + 1620'

30³ - At 15-20' high in Bridgeport - 20' above quarry at 1570' is the Solsville, Near the top

30⁴ Top of Solsville about 1380-1390

30⁵ Delphi - near top forms ledge of hill



Sept 30

1193

30 - Remeasured road section of 298. I started from the top of the Solsville at the house & it took $30\frac{1}{2}$ hand level steps to the top of the Mottville which is exposed in the roadside. This makes the top of the Mottville 165' ^{15'} above the top of the Solsville. The contouring here is wrong or the hand-level is wrong. Yesterday I found the top of the Mottville 25' below the top of the hill which would put it at 1580' which is probably the true elevation. From topography etc. I would say it is about 1575'. Apparently where I have it is about O.K. but the Solsville is a little too high. The fauna of the Packardport here shows the great influx of Hamilton species.

30¹ - small exp. top of Mottville in a gully. Top of hill covered with loose Delphi pieces

30² - Solsville - whole section, exquisite exposure - fossils plentiful

Orthoacantha	Gymnocrinus	Epyrocrinus
Horseshoetia	P. flabellum	
C. continens	L. perplanus	
Nucleospira	M. concentrica	

Top of Sol. between 1600 + 1620'

30³ - R. 15-20' high in Bridgeport - 20' above quarry at 1570' is the Solsville, Near the top

30⁴ Top of Solsville about 1380-1390

30⁵ Delphi - near top forms ledge of hill

30⁶ - Just below house is an excellent exp. of Upper Peckaport. Mottville is probably a little below house say at 1400'

30⁷ - Delphi (top) in road at 1445' 1194

30⁸ - near top of Pompey

30⁹ - Crumbly sh. of lower Berwyn in small gully

30¹⁰ Coarse shale with *S. pinnatus*, *M. subolata*, *Mucella* - Probably lower Pompey but cl. can't place it otherwise & I don't remember *S. pinnatus* in the lower Pompey.

Oct. 1

Oct. 1 - Top of Mottville in gully is 0.3 mi. N of road intersection, by H.L. I make it at 1366'.

1² - Solsville - top 16 H.L. steps above road or at 1267'. Forms a prominent ledge.
L. triquetra, *P. lirata*, *Spirifer*

1³ - I make top of Mottville on hill at Peckaport 1280' about 130' above house at intersection.

1/55
10 78

5478

Oct 2.

2 - Top of Mottville at 1408' in small gully

1195

2' - Delphi forms the bed of the road on the little rise 0.2 miles from intersection

2² - Very top of Delphi at 1508'

2³ - 15' quarry in Pecksport - my map is wrong here

2⁴ - I make top of Delphi to be 1465' - 25 steps from top to the road. Handlevelling from the top down gave between 1480 + 1490' The top is probably at about 1480' 135

2⁵ - Very top of Delphi at about 1500'

2⁶ - 1430' Delphi, near Middle

2⁷ - below dam & on shore of pond Mottville is exposed - The Delphi are 0.2 mi N of corner at Morrisville & ~~3.5~~ 0.35 miles S of corner opposite 2⁶. The Mottville is at about 1340-1350' Old Barker House now called Westendorf Hotel

1196a

1380'
90'
1478 - July

NEW YORK
PITCHER QUADRANGLE

Genesee 1, 98' (2)
Base of July
1478'
75° 45' (Morrisville)
42° 45'





1196a

$$\begin{array}{r} 1380' \\ 90' \\ \hline 1478' \end{array} \quad \text{July}$$

NEW YORK
PITCHER QUADRANGLE

$$\begin{array}{r} 1380' \\ 1478' \\ \hline 1478' \end{array} \quad \text{Base of July}$$

Genesee 1478' (2)
(Morrisville)
75° 45' 42' 45'



October 3,

1196

3- About 8 or 10' of argillaceous ss containing *Canarotocchia* + *P. flabellum*. Probably Upper Colgate. This ls should probably bring a little S. of the road.

3'- lower Ludlowville

3²- Earlville ls. - in place behind 1st house from corner at 1180-1190' nearer the latter - small gorge of Ludlowville upstream - many blocks strewn about of the ls. showing it nearly in place - is in place just behind the house.

Whitfield's *Psychotaria prespici*
which is rare.

$$\begin{array}{r} 15 \\ 2 \quad 3 \\ \hline 173 \end{array}$$

October 4th - I make the Dully here
19' 3" thick. There is a noticeable dip to
the S. 2 1/2' from the top of the Dully 197
the *Platyceras* bed which is 4-6" thick
here. Beneath that comes 6" (visible) of blue
sh. I think this is clearly sh because
where unweathered has crabs in it passing
lens. The shale is not very hard when
fresh in the stream. Not possible to get
a bed by bed section. Top of Dully must
be 1620 + 1630. Genesee-Helfferburne contact
about 15' above rd. intersection

4' Small patch in road of fossiliferous
light grey, unevenly bedded arenaceous
shale. Contains *Leptaena*, *Spirifer* &
Chonetes. 1860'

Mullen Brook

In Mullen Brook the thickness &
sequence of the Dully are the same
as at Weyers. The shale bed is 1'
thick and the *Platyceras* zone 4-6"
In the uppermost beds small corals
& *Phacops* appear to be the only fossils

I measured the Dully here at 19' 6" and the
base of the *Platyceras* is 3' below the top
of the Dully

October 5

1198

5- Lower Moscomb about 60' below
top hill. P.P. somewhere about 1700-1710

5¹ - Search for Earville ls - lowest
rock in this gully is dark ^{out} fissile
shale with *L. Klappa*, *Camerothyridia*
& lamellibranchs. Upstream there is
heavy-bedded ss. & shale as below
I am convinced that it is all Ludlowville

5² - Appears to be same as in 5¹
probably Ludlowville - might be Berwyn

5³ - Rock that looks like Berwyn.

Bliss Qy. is $2\frac{4\frac{1}{2}}{26}$ miles N of Morrisville

October 6

as far as I can make the base
of P.P. on Georgetown - West End Rd.
It is 19 hand level steps above the
rd or at about 1603'. The P.P. is
sandy ss & sh. alternating for about
7'. *Davurinus* is abundant. It was cut
in from house on hill to exp. & ~~75~~
0.75 miles from next rd. intersection.
The ~~Ataggs~~ beds of the Upper Ludlowville
are 25-30' below the P.P.
David

Pease Farm - On Bradley Brook Creek
1000 paces from Pease house is a
dip with *Berrym*. I think ls is
near 1450' - There is no Red Gate
shale but the ls. is clearly over
within two feet of the Colgate ss.

1199

Meet Woodruff - Friday 12 A.M.

October 8

1200

On top of hill at about 1690 feet is Delphi exposed over hill top a some distance along intersecting road, measured from the bottom there are about 80' of Delphi. The exposure is stratigraphically near but not quite at the top of the Delphi. I'd guess the top to be near 1705'. The Mottville appears to be at the double bend at about 1610-1620'. The Delphi is exposed for 0.3 mile S down road to south

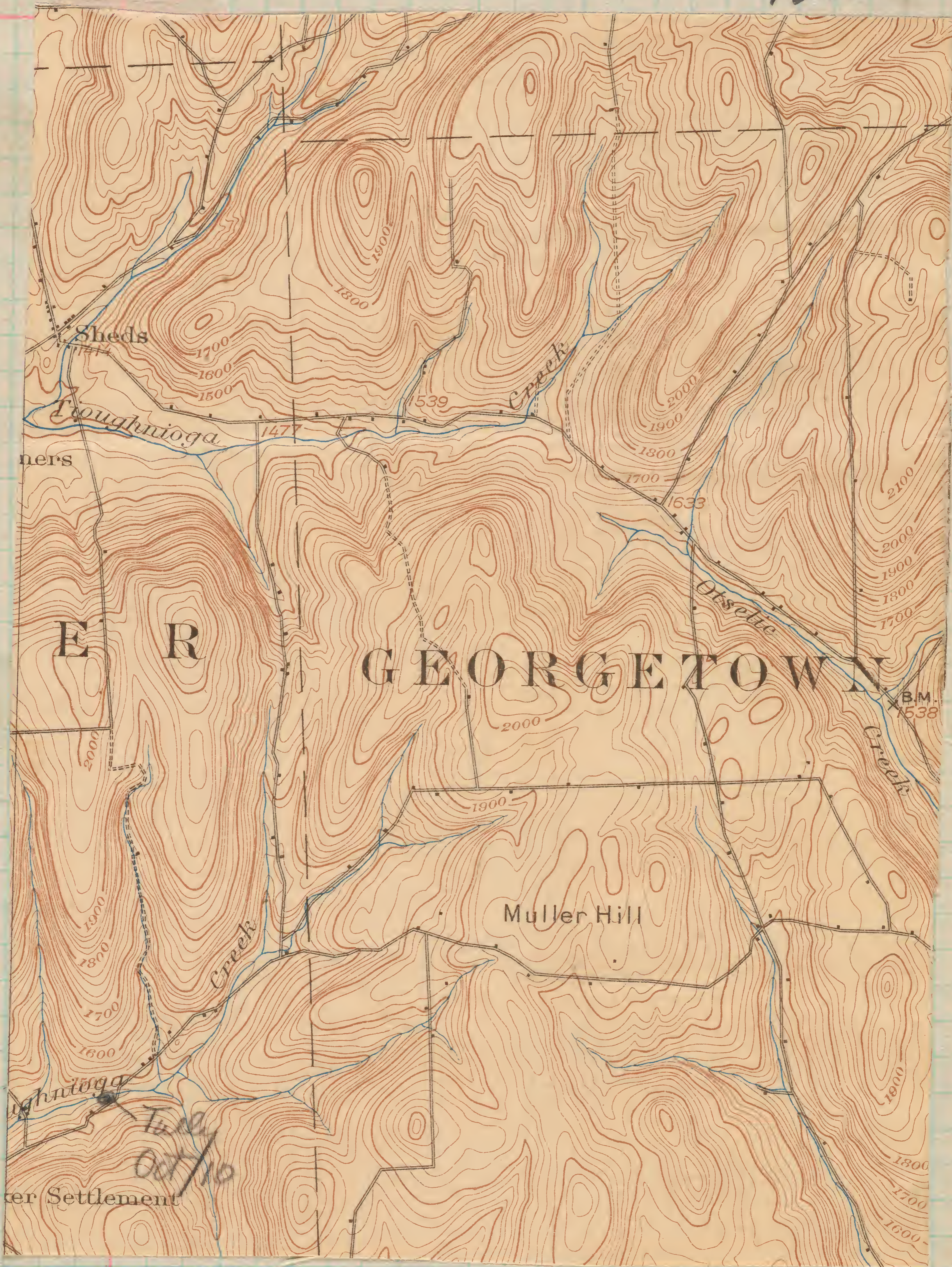
Oct 9

Near top of Delphi 300 paces E of stream-road crossing. At Oct 8 revisited Mottville occurs in road at about 1610-1615 at first bend (south-W). The Delphi is evidently fully exposed in the gully Mottville is at about 1600' and is well exposed.

At Red Gate the base of the Earville ls. is irregular suggesting unconformity. At the falls the ls. is $2\frac{1}{2}'$ thick. Corals worn at Bradley Brook, suggesting rolling.

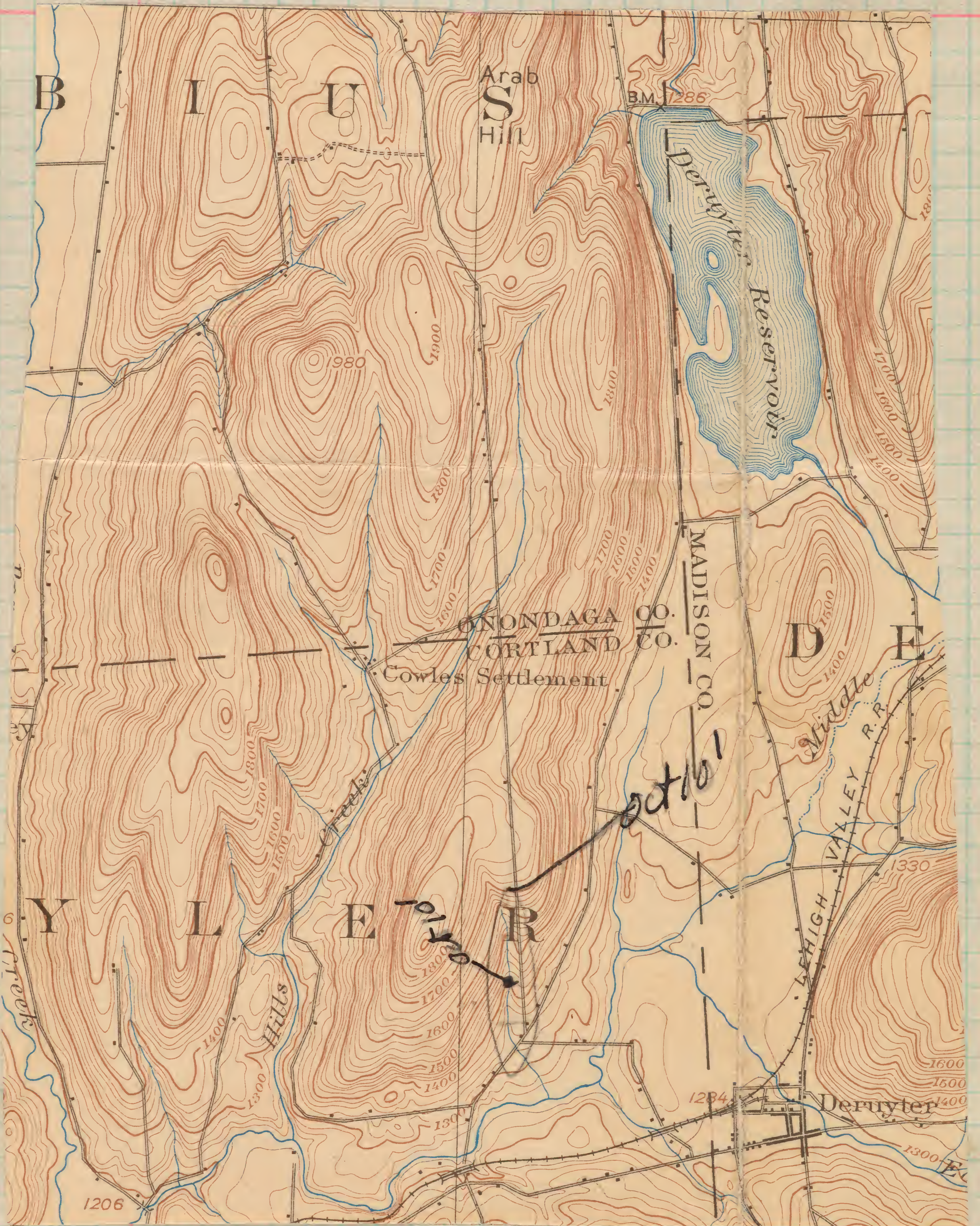
1731

1200a



1931

12006



Oct 10.

1201

2⁴ revisited - the exposure here of about 45' of sandy rock is definitely the upper part of the Delphi. In the lateral gully there is Berwyn all the way.

Oct 10

Gully at Derry - basal bed lithologically like Hyp. bed. below are some Galena shales, possibly a foot not belonging to Hamilton base of Gully about 1450'.

Oct 10'

Lowest part of Gully at —

Glen 1½ miles NW of Derry
over for section

Genesee Oct 10'

1701a

62

1 1/2'

ls rather shb

1' ± W 2'

5

sh 2' top

1' UB

4

3 1/2'

3

Hypothyris bed. with 2' 2.
C. aurora

11' Chonetes aurora
zone

Covered

1- Shaly ls. fracturing like sh
thin bedded, grey - abounds in
C. aurora

1202

2- Hypothyridine bed - hard sandy
massive fine layers one solid
layer 1' thick - an upper layer 1'
thick - Lower layer has
H. cuboides, Schuchertella, Donwillina,
C. aurora abundant, small Spinea
Upper bed has C. aurora.

3- About 3 1/2' of modular ls., thin ls
& thin bedded shaly ls. abounding
in small corals. Uppermost layer
rather massive modular.

4- About 1' shaly ls with many
fossils - ~~has A. spinosa and~~
~~probably the West Brook sh.~~
and modular ls. abounding in
Tropidoleptus

5- 1' shaly ls. with A. spinosa
= West Brook sh.

6- 1 1/2' shaly ls. more massive
small corals + Phacops

4/2

October 15.

1203

West Brook - The top of the second falls
& calcareous buff ls. 4 ft. steps
above the Platyceras bed. There are
about $9\frac{1}{2}$ ft. steps to the first
unquestionable Sherburne. Peculiar
upliftings on surface of slabby ls.
are worm-burrows according to Ek

1203a



Oct 21³

1204

Blocky shale, very sandy,
fracturing in irregular lumps,
fossils abundant of few kinds.
Fossils in layers forming thin
lime bands.

Schizophoria sp. n.
Gonophora 2 sp.
E. permatosa a
C. coronatus a
B. circularis n.
Nucula varicosa c
D. alveata
Glyptodesma sp.

Oct. 21⁴

Rensselaerville — upstream from
bridge 1405' - 1415' is said to be
Hamilton, then 65' of Green Sherburne
— 1st heavy red bed begin Onondaga

Hamilton fossils —
Gonophora c
L. macridonta
P. flabellum.

October 21

New Scotland town — at road intersection is the Onondaga and ^{Marcellus} running up
Pinnacle hill nearly to top. The Marcellus
is a black shale with brownish-white
streaks, breaking into lumps, not
chips as at Oneida Creek. No shale
is fossiliferous unlike the
Chittenango shale elsewhere. The

68
Marcellus clearly represents the
black shale passing over to a
Hamilton facies toward the
east. The fossils are chiefly small.

The Marcellus ends with the
influx of the first "blocky" beds
about 200' above the top of the
Onondaga. Here also are sandy
beds forming a flat. All of these
shales & sands including the
Marcellus look like the
Cardiff of the Morrisville region.

All of the Hamilton of the Berne
region appeared to me to be of
Cardiff age having a Marcellus
facies.

1204a

